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Original Contributions.

A FEW POINTS ON PYORRHEA ALVEOLARIS.

BY J. V. BOSWELL, D.D.S., SPRINGFIELD, MO. READ BEFORE THE MISSOURI STATE DENTAL ASSOCIATION, AT SPRINGFIELD, JUNE, 1906.

This subject is one which should have the attention of every dentist; hence I have no apology to offer for torturing you with another discussion. However, I will endeavor to make my essay of practical value, simply attempting to show the points in old theories which have appeared to me most reasonable and those which have aided me most.

I assure you there is no part in dentistry more interesting to me, yet until about three years ago I believed, along with so many of our younger practitioners, that pyorrhea alveolaris was incurable and that it was an absolute waste of time and nerve force to attempt to cure it. This impression prevails because a majority of dentists are not in a position enabling them to work out things for themselves, and, having to look to higher and more scientific men for knowledge, they usually accept the teachings as given, often with misunderstandings.

The text-books of to-day and nearly all essays of former years lead one to believe that the causes of pyorrhea alveolaris must be sought for in some hidden and unknown constitutional condition, and they apparently emphasize the magnitude and the unsurmountable difficulties attending its management. Of course, I could not present anything new on the subject, for everything has been repeated many times in the past, but I hope to impress some of you with the belief that the treatment is within the power of every painstaking dentist, the results to be gained depending upon three things, his own thoroughness, the cooperation of the patient and the extent to which the disease has already progressed. I

am sure that if half as much effort were given to the study and treatment of so-called pyorrhea alveolaris as is given to perfect any of the other branches of dentistry we would have hundreds and thousands of mouths in a better condition, which are now being dismissed as hopeless and the teeth assigned to the forceps. It is not because of the lack of ability, but the lack of confidence, that these teeth go untouched. I am glad to say that lately an increase in the number of essays is noticed, presenting different views to those of earlier days. This is indicative of increased attention, and I believe that within a decade satisfactory solutions of the etiology, pathology and treatment of pyorrhea alveolaris will come suddenly upon us, viz., they will be generally accepted, just as it has occurred in that crowning glory of dentistry, porcelain.

No matter what the cause may be, the practical treatment must be local, as we are unable to depend upon any constitutional treatment, for reasons pointed out later. We must dismiss such treatment or consider it merely auxiliary. It is not necessary to enter into a discussion upon the name of the disease. It is known to be a misnomer. Pyorrhea alveolaris has always been its best-known name, and we will use it in this paper.

One great trouble we find in the writings upon pyorrhea alveolaris, and that is its onesidedness. One man believes that everything points to his theory of the constitutional origin, while another is convinced that there is nothing to it but oral uncleanliness. Neither is willing to believe that possibly more than one thing may be a factor or have some slight influence. Some are so arrogant and assuming that they are not willing to admit of the truth of the personal equation of which Dr. Patterson wisely spoke a short time since, and their criticism reaches the point of being abusive. Each one is entitled to an opinion of his own.

Now as to the cause of pyorrhea alveolaris. For myself, I am firmly convinced that there are conditions existing, both locally and constitutionally, which must be considered together. Which factors are to be viewed as exciting causes and which as predisposing causes is questionable; likewise the extent to which either has influence is difficult to determine. It appears to me that the principal and most important factor entering into the disease is the teeth themselves. All foreign substances accumulat-

ing upon the teeth and the gum margins, such as decaying food, stagnant mucus, masses of bacteria and their products, etc., I would call exciting causes. I fully believe that a mouth kept clean from childhood would never be subject to the disease.

Secondary to the accumulations upon the teeth we must necessarily have a susceptibility, a weakness; and herein we have the result of constitutional conditions, such as failure in the function of one or more of the eliminating organs, of the circulatory apparatus or of the digestive tract. Any lesion which will tend to lessen the vitality or resisting power predisposes to inflammation, resulting from the local irritants. These, we must understand, will not predispose to that factor alone, but tissues throughout the entire body will be made subject to destructive influences; and the tissues about the teeth, viz., the pericementum, the alveolar process and the gums, being very susceptible to changes, are more or less affected, and the loss of the combating power allows them to succumb to the influences which are distinctly local.

Dr. D. D. Smith, one of the most pronounced advocates of the local cause theorists, speaks of "any mouth with pyorrheic tendency," evidently believing that what would be sufficient to produce pyorrhea alveolaris in one mouth would not do so in some other. Plainly, then, there must be weakness in the parts, just the same as is the case in producing caries of the teeth. It is universally accepted that the causes of caries are distinctly local, yet who will deny the influence of systemic derangements?

It is impossible to classify the causes of pyorrhea alveolaris except in a general way, as there are so many varying phases of it, due practically to the varied degrees of irritation and susceptibility, just spoken of. For example, in one case we may have large masses of foreign matter accumulated, with little bad results, while in another we may have the smallest amount of accumulation and the case be one of the most difficult types to manage. In fact, one of the most certain points to denote an influence other than the mere presence of foreign substances is found in the many, many mouths of laborers and others who never cleanse their mouths, while in the middle and upper classes of society, where some measure of care relative to the mouth is taken, we find more pyorrhea alveolaris than in the former class. In my ex-

perience I have found that some cases appear to be due more to mechanical irritation than to chemical, and perhaps these should not be reckoned with true pyorrhea alveolaris. They are easily cured by a thorough cleaning, which is comparatively easily accomplished. Our hardest cases are those where but little tartar is present, but where the fluids of the mouth are thick and sticky and seem almost too poisonous to put the fingers into. We find that most of our cases appear in the mouths of people of a lymphatic temperament, those people with a sluggish circulation, absence of energy, who tire easily, etc. Next thereto a large percentage will be of the bilious temperament, with organic derangements. This is followed by those nervous, always-working and overtaxed people, exhibiting a smaller percentage of pyorrhea alveolaris, while lastly we have the strong, hardy, genuine type, with active circulation, they presenting little caries and rarely a case of pyorrhea alveolaris. Why is more pyorrhea alveolaris found with the first class and less in the latter? No doubt the shapes of the teeth to be found in lymphatics, having large crowns and small roots, afford lodging places for debris in the interstices, and at the necks; but it is also reasonable to believe that the condition of the system is a great factor. Those subjects are inactive, as a rule big eaters, and consequently have an excess of waste products. Contrary to this condition, we find the person of sanguinary temperament to have a well-balanced organism, full of strength, resistance and endurance. Those of sedentary habits, such as lawyers, bankers, bookkeepers, etc., are the greatest sufferers.

It is not disputed that the serumal calculus found upon the roots of the teeth is the result of the disease and not the cause, although it becomes a greater or less irritant after its formation. That these deposits contain more or less urates, for instance, is likely correct, as stated by the uric acid theorists, but this is not always the case. This calculus is thrown out from the blood because of the low state of vitality and the inflammation already present in the part. The deposits usually take place in those parts where there is the least resistance to be found, the tissues being already in a dying condition.

Dr. Talbot asserts that the teeth are practically foreign bodies in the mouth. This seems to be shown in cases where antagonizing

teeth have been lost; nature attempts to expel the useless member. Dr. Clements of Macon, Miss., twelve or fifteen years ago showed by microscopic work that the cementum of the teeth affected with pyorrhea alveolaris was more dense than that of sound teeth, and that this was due to a deposition of calcium salts in the canaliculi, the salts displacing the organic tissues therein and thus destroying the vital union of the tooth with the surrounding tissues. Dr. Smith also speaks of the density of structure of teeth afflicted with pyorrhea alveolaris.

In this density, I think, we have an important point for consideration. I believe that teeth affected with pyorrhea alveolaris are not only more dense in the cementum, but throughout their whole anatomy, and that this density is brought about some time after the full development of the teeth. It is evidently due to a deposition of calcium salts in the tubuli, displacing or ossifying the fibrillæ; oftentimes we find the pulp more or less ossified. That the organic matter is displaced is shown by the absence of sensitiveness, as we know that in some cases we can do lots of drilling or grinding, almost to complete exposure of the pulp, with little or no pain. Just when, how or why this ossification takes place I am not prepared to say, but most likely it is after the teeth have become affected and the circulation and nutrition disturbed, for we nearly always find that earlier in life the teeth were subject to caries. After the pyorrheic attack there seems to be immunity to caries being established. It is likely brought about by the same influences and in the same manner as the deposits on the roots of the teeth in inflamed areas. That the question of blood supply enters into the production of the disease is shown by the fact that pyorrhea alveolaris rarely attacks a pulpless tooth and its progress upon an affected tooth is retarded by the removal of the pulp. An affected tooth is nearly always benefited by the removal of its pulp, and although it has never been definitely stated why this is the case, it is most probably due to the change in the blood supply in the cementum and pericementum, the withdrawal from the dentin probably allowing an increase of nutrition to those structures, hence an increased vitality.

Now in the treatment of pyorrhea alveolaris, good, hard, thorough work is necessary. It is not a freshman's job of cleaning.

After first extracting all hopeless teeth, we must thoroughly remove all deposits and follow the scaling and scraping with thorough polishing, using such means as we find most efficient in our hands. In this scaling operation it is nearly always necessary to anesthetize the parts, which can be done by injecting a good local anesthetic into the pockets, using a blunt-end needle set against the tissues. After polishing, pure lactic acid should be worked into all pockets to dissolve remaining particles of calculus. The breaking down of the alveolar bone is necrosis, and curetting of the margins is therefore undoubtedly indicated. Not only is this done to remove the necrosed bone, but to smoothen the roughened jagged edges, which act as a great irritant to the already inflamed gum tissue. Those of you who have examined maxillary bones which showed evidence of pyorrhea alveolaris during life have noted this condition. This curetting accomplishes two other purposes of value: blood-letting and the production of new tissue, which is less easily attacked by recurrent pyorrhea alveolaris than the old one. The operation; though heroic, is not painful, being done with the tissues anesthetized in the manner stated above. The gums should be painted with tincture of iodin two or three times a week for a short while. Of course, we want the use of a tooth brush, also an efficient mouth-wash, although we recognize that the benefits derived from mouth-washes are not what we desire. Now, as stated above, constitutional treatment cannot be depended upon for producing results. Certainly, if we can induce our patients to drink plenty of water, take fresh air and exercise, use judgment regarding quality and quantity of foods, we have acquired some valuable aids, but it is simply an impossibility to change the habits or daily routine of life of persons. Our medical friends will tell us their troubles along this line, and they have authority which we as dentists do not have.

We have no time to discuss the use of drugs internally. Such practice is folly. No direct benefits are to be had. All loose teeth must be made firm by appliances, as the operator sees are indicated—bars, bands, staples, etc. Many ingenious devices may be used. Bridgework affords one of the best means, but must be constructed with observance of the conditions. Often it is the case that dead and denuded roots of molars can be amputated,

leaving the remainder of the tooth to do service for quite a while. The models that I have passed show better than words can tell—a few cases of root amputation, retainers used, etc. All retaining fixtures must be constructed and used with a view to permanency, for alveolar tissue, once lost, is never reproduced, and although the teeth may tighten up in many instances, they never regain their normal status.

In closing, I will say that I believe the most important influence in the production of pyorrhea alveolaris is the accumulated debris upon the teeth other than tartar, and that the mechanical irritation of overhanging fillings, edges of crowns, etc., has little to do with it other than affording lodging places; it acts by bringing about congestion and stasis in the cementum and pericementum. The circulation is impeded by the nonexpansibility of the capillaries; the deposit of calcium salts further obstructs the circulation, until the vital union is entirely destroyed and the tooth lost. Pyorrhea alveolaris improves immediately after extracting the offending tooth. The treatment, therefore, must be practically local only, the constitutional treatment being of a general character and mostly by natural methods. Liability to recurrence is very great; hence "eternal vigilance" is necessary.

Discussion.—*Dr. H. G. Tanzey,* Cameron: I can sanction almost everything the essayist has said, and I have been giving a good deal of thought and time to that subject in the last few years. I was glad to notice that he says we can all cure pyorrhea alveolaris, because I believe we can if we are patient enough. At the Western Dental Alumni Association meeting I said that we could cure pyorrhea, and some of the doctors said my conscience was seared, and there were so many pessimists there that I felt a little weak, but after seeing my patients at home I began to inflate again.

I would emphasize one or two points necessary to good results. One is the thoroughness in removing the deposits from the teeth. If you are not thorough in this, your foundation is weak and you will fail. And you must have the cooperation of your patients and get them to use washes, powders and anything else to get their confidence in your treatment. Frequently when the teeth are so loose as to be dancing and tottering around it is wisest not to

attempt to cure it, and much depends upon the extent of the treatment.

Another thing to be considered is the price. Pyorrhea does not yield very readily to treatment unless you are being well paid for it. You cannot work for the same price that you clean teeth. I differ with Dr. Boswell that it is necessary to use some anesthetic before scraping and polishing. I think it is absolutely unnecessary. In the first place, I think cocain is the only first-class local anesthetic, and I would not advise the use of that. I never use one. I believe it has a tendency to stay the bleeding, and I want the gums to bleed freely.

The essayist says you will have no results from constitutional treatment. I believe you can get results from constitutional treatment. You can give some treatment that will aid in the suppuration, and I like to have suppuration and get rid of these pockets. I never use any appliance to tighten the teeth until after they are cured. Just let them stay loose while being treated. I do not believe the removal of the nerve will aid in any way. I never tried to remove the nerve but once, and it did no good in that case. I think we are all pessimistic to a certain extent. I think there is nothing permanent in this world, nothing to idealize or to worship, but words once spoken are forever gone and pain once stopped has forever ceased. Because we have lost much tissue around these teeth does not justify us in saying we cannot place them in a nice condition so that they will be comfortable for many years. Tissues lost are absolutely lost, but we can restore health and make it a pleasure to the patient to retain those teeth.

Dr. Dameron, St. Louis: The paper is a good, common-sense resumé of the present theory of pyorrhea. We depend more and more upon instrumentation and cleanliness. We had a very interesting clinic this morning in this line. I had the pleasure of hearing a lantern lecture by Dr. Gordon White, who has met with much success, a few weeks ago in Nashville. He practices devitalization in certain cases, and believes in constitutional treatment. He classes these patients as those who are overvigorous, those who lead sedentary lives and those having some constitutional defect. He urges that we build them up and teach them cleanliness, and so attain success.

Dr. J. D. Patterson, Kansas City: The paper agrees with my experience, to a large extent at least. Many years ago, when I made the statements that have been made here to-day, there was nobody who agreed with me that the disease was curable. The theory that because the disease is affected by constitutional conditions it is incurable is disappearing. I am glad to see that, for it has led to the destruction of many good teeth. Our writers have led us by these statements to put off doing what we could do, and I am glad to hear less frequently about that now. I have nothing to offer in the way of criticism except, perhaps, in regard to the devitalization of teeth. At one time in the treatment of this disease I devitalized everything I found infected. Now the rule is to devitalize if you are sure the pulp is in a pathological condition; otherwise recovery will be more rapid with the pulp in position.

That we often find the cementum thickened is true, but that is subsequent to the inception of the disease. I have had of late years patients who were quite young, twenty to twenty-five years, which is unusual, for it takes a long time for the condition to become established. In these cases occurring in young people you do not find this secondary calcification. These secondary deposits are the result of the irritation. On drilling into those teeth they are almost without sensation until the pulp is almost reached. Where there is a considerable portion of good tissue about the tooth the possibility of cure is absolutely certain. It will require time, but by patience you can save thousands of teeth that were formerly sacrificed. It is as curable as any disease if taken in time and the work is done thoroughly. If there is a fault in metabolism or nutrition, if there is any autointoxication, it should be corrected, but let the physician do that. You are not the person to do it. Don't get into the physician's territory. If there is any constitutional treatment required, even if it is simple rainwater, let the physician prescribe it. But the fact remains that the large majority of patients affected with pyorrhea have absolutely no faulty metabolism or constitutional disturbance; they are healthy, strong, vigorous in every way. There is no history of gout, uric acid diathesis, etc. But when it is present you want that looked after also.

Dr. W. B. Dickson, Hermann: I wish to express my apprecia-

tion of this valuable paper, but I wish to take issue with Dr. Tanzey in regard to allowing the teeth to remain loose if possible to tighten them. I have tried both ways. If it is possible to fasten the teeth without irritation to the gingival borders it is of unquestionable advantage in bringing about a cure. I would like his reasons for not ligating such teeth.

Dr. Tanzey: I have no particular reason except that it is not necessary. Many dentists have so many fanciful ideas that are unnecessary. If the teeth are so loose that they will not get firm after you have treated them awhile, you might as well let them alone. They will get solid after treatment, as solid as is necessary. It does not require an extensive appliance that will irritate the patient.

Dr. G. W. Musgrave, Ash Grove: I have had an experience along this line with pyorrhea. If you wait until the peridental membrane is destroyed you have let it go too far. If you can cleanse it and be sure that you have cleansed it, it will stay cured.

Dr. Lowry, Kansas City: I have a case in which the central incisor is involved. I cleansed it as thoroughly as it was possible for me to do, and when there was no cessation to the discharge of pus I resorted to the destruction of the nerve, and still the flow of pus continued. There was not much looseness of the tooth, but by pressing on the gum on the outside it was followed first by pus and then by blood. I do not know what to do with it unless I extract the tooth and remove all foreign substances, replace it in its socket and leave it there. That tooth has got me stumped, and I would like to know what it is possible to do for it. I do not want to resort to extraction and bridgework; I want to save that tooth.

Dr. Musgrave: Cleanse it, and cleanse it well. Use sulphuric acid, weak, then clean it again and use nitrate of silver, and you will stop the pus.

Dr. Patterson: The only solution is that he has not removed all of the deposits. I used to think it was impossible to remove it sometimes in the case of a central incisor, but I have found people who can do what I cannot do, and you may find people who can do what you cannot do. If you think you have not done it, get some other instruments and try again.

Dr. Lowry: There may be a circumscribed necrosis of the alveolus, which we sometimes have in time in these cases. I cannot conceive of any other trouble.

Dr. Kissel, Joplin: Dr. Lowry's case reminds me of one I had. It was a lateral incisor. By traumatism the pulp had died and the tooth became loose; the peridental membrane became affected. At first I diagnosed it as pyorrhea. It did not yield to treatment and I took out the tooth. The constant discharge kept up. I treated the socket. Then the central incisor was affected and the case grew worse every day, so I removed the central incisor. In doing so I found a looseness of the intermaxillary plate, which led me to diagnose the case as necrosis. Finally I removed the plate, curetted well, and in two weeks' time the place was healed up. I restored the gum with continuous-gum facing, and the result was satisfactory.

Dr. Boswell (closing discussion): There is one thing about this question of constitutional treatment. I would like it to be understood that we cannot get permanent results, but we cannot change the daily life of people; and while we may get a little result from the absorption of waste products in the body, the treatment would have to be continued through life. As to the anesthetic, it is very difficult to get into those pockets without having the gums anesthetized. I never inject it into the tissues, however, but right into the pocket. Of course, we would not put on any appliance until the teeth are thoroughly clean; then the appliance comes in as part of the treatment. I would devitalize only in the very worst cases, but in those cases it does help.

PROPHYLACTIC FORM OF FILLINGS WHICH WE MAKE IN PROXIMAL SURFACES

BY J. F. WALLACE, D.D.S., CANTON, MO. READ BEFORE THE MISSOURI STATE DENTAL ASSOCIATION, AT SPRINGFIELD, MO., JUNE, 1906.

With the tendency of all parts of the human body toward disease, and especially as no portion of the system is more universally prone to the onslaught of disease than the organs of mastication, every operation should have the careful consideration of the indications of environment, as these are the evidence

that must guide us in determining the degree of susceptibility or immunity of the case under consideration. By these evidences found in the mouth we are able to anticipate the extent to which decay may progress and are able to judge how far our cavity margins should extend to place them beyond the area of susceptibility. No class of men, professional or otherwise, are called upon to exercise a greater degree of judgment or a higher degree of skill than is the dental practitioner. His operations, if successful, stand as monuments of his skill; if unsuccessful they are not always laid beneath the kindly mother earth that hides within her bosom so many evidences of inability. Neither can we attribute their failure to some higher authority or judge, but we must bear the evidence of our errors of judgment and lack of skillful manipulation.

True, the condition of environment may change so that a case possessing all the indications of immunity to-day may later develop into one of violent susceptibility. These are, however, the exception rather than the rule, and my experience and observation would indicate that in such cases, if the proper precautions had been taken to give the filling the proper prophylactic form, there would have been fewer recurrences of decay than new cavities developed. There is no one thing which contributes a greater number of failures to the operation, that results in a greater number of cases of recurrence of decay, is a source of greater discomfort and results in the loss of more teeth, than is the failure of the dental practitioner to give to his operations a prophylactic form.

In failing to do this he inflicts *needless* pain by extending his cavity margins where the existing conditions do not require it and he neglects to extend them where the future salvation of the tooth depends upon it. He *may* create conditions that will result in the disease of the gum septum, causing inflammation and absorption of that tissue in the interproximal space and often the destruction of the alveolar process as well as the loss of the teeth. By failing to give the finished operation the proper form he converts what should be a clean, healthy and comfortable tissue into one prone to collect and afford a lodging place for food particles and secretions, which in turn are decomposed by the action of bacteria

within the mouth, thus creating filth and disease. Frequently, instead of producing normal, we create abnormal, conditions, thus destroying both the hard and soft tissues. These results are daily being presented to us in our practice. It is lamentable that so many fellow practitioners are making their operations regardless of the consequences that must follow, due wholly to the improper form given to the finished work.

In a properly formed filling there are four points to be attained: the preservation of the full mesio-distal diameter of the tooth, a correct form of the proximal surface, a correct form of the interproximal contact, and the health of the gum septum. These points should not only be given to gold and amalgam fillings, but to gold or porcelain inlays, as well as to all crowns, for the comfort and utility of each are alike dependent upon the form given. Upon this form we must depend to restore all parts to normal conditions of health and utility. In most cases, if we restore the original form of the tooth it will accomplish ideal results, but it frequently occurs that the original form does not accomplish any or all of the points mentioned. In those cases a form should be given to the filling that will accomplish it. In order to restore normal conditions (for our operations are always upon abnormal conditions when the tooth is decayed) we must first of all secure ample separation, that the full contour of the tooth may be restored in the finished filling. We should have a well-rounded contact, so that it will touch the proximating tooth only at a small, rounded point, and this should be sufficiently prominent to restore the original tooth form, thus giving a proper contour to the interproximal space. This cannot be accomplished unless sufficient space has been obtained to fully restore the original mesio-distal diameter of the tooth. If we fail to restore the mesio-distal diameter of the tooth in making a filling in the proximal surface, the two teeth soon move closer together under the force of the inclines of the occluding teeth. This narrows the interproximal space impinging upon the gum septum, thus causing its absorption to a greater or less extent. The interproximal space being narrowed, and the gum septum being partially absorbed, it will afford a place for the lodgment of food particles in a position difficult to cleanse; also, because of the narrowed proximal space

caused by the teeth falling closer together the lingual and buccal embrasures are shortened. This in time prevents the free excursion of food through them in the process of mastication. This increases the area of susceptibility, both lingually and buccally, and necessitates cutting the cavity broader in order to place the margins beyond the danger line of recurrent decay.

If we fail to secure ample separation for the restoration of the tooth, the contact is of necessity broad and flat, on account of the lack of space in which to bring the proximal surface of the filling up to a well-rounded contact point. If the contact is broad and flat it greatly increases the difficulty of maintaining cleanliness. Stringy food having a tendency to cling in all interproximal spaces, and especially so where the points of contact are broad and flat, it packs in such spaces and is forced upon the gum tissues and often produces intense pain and causes the absorption of the gum tissues or forms a pocket where debris may collect and decompose. Such a condition creates decay of the tooth, if not disease of the peridental membrane, often resulting in the loss of the tooth itself.

If we fail to gain sufficient separation to restore the original mesio-distal diameter of the tooth, we are unable to give the finished filling the proper form. All proximal surfaces should be nicely polished to an oval form linguo-buccally—not rounded too full, for if rounded out well they occupy the interproximal space intended by nature for the gum septum. They should also be trimmed from the gingival margin to the contact point, bringing them up to a sharp, round point where the filling comes in contact with the adjoining tooth, similar to that of two marbles coming in contact with each other.

If the separation has been sufficient and the cavity so prepared that the buccal and lingual margins are placed where they will be self-cleansing, the filling may be trimmed from the contact point to the cavity margins, producing broad buccal and lingual embrasures, which will invite the passage of food particles through them, thus securing the greatest possible area of self-cleansing surface. These conditions, according to nature's own methods, very largely tend to prevent the recurrence of decay by increasing cleanliness through the ordinary process of mastication.

Should we fail to secure separation, our proximal surface must, for want of space to trim the filling to form, be very broad and flat, thus preventing the contouring of the proximal surface and shortens the embrasures so much that should our cavity margins be extended to where we would ordinarily consider them self-cleansing, the particles of food could not pass over them in the process of mastication and accomplish the results they would if ample separation had been obtained. In such cases, if we wish to secure the greatest degree of permanency in our operations, we must extend our cavity margins farther lingually and buccally, thus making a needless sacrifice of energy and tooth structure on account of not having secured sufficient separation before attempting to make the operation.

In my practice I have met with a great many cases where the filled cavity was large, the filling presenting a large occlusal surface, but made without an occlusal anchorage at right angles to the body of the filling. The stress of mastication, being very strong, had forced these fillings from place, necessitating their replacement. Having a natural desire to avoid the dislodgment of the filling, instead of securing anchorage (as we are now taught) at right angles to the body of the filling in the occlusal portion of the tooth, refuge was sought by the first operator in reducing the stress upon the filling by inclining the occluding surface toward the adjoining tooth, thus reducing the force brought to bear upon it by partly destroying the occlusion. This not only destroys the efficiency of the organ of mastication, but makes of it a menace to the health of the proximating tooth and gum septum, for in mastication the food passes out from between the teeth in the direction of least resistance. The incline being toward the proximal surface, directs it into the interproximal space upon the gum septum, where, if permitted to continue, it causes absorption of that tissue and the formation of pockets for its accumulation and decomposition, as heretofore mentioned. If when the cavity was originally filled a proper anchorage had been given the filling and the occlusion retained, the contact would have been near the occluding surface, which, if beveled from the contact point to the occluding surface and the angles of the tooth, the

operation would have been the means of restoring health and comfort as well as utility.

DISCUSSION.—*Dr. H. S. Lowry,* Kansas City: There are two things to be considered in all operations upon the teeth. The one is to preserve the teeth and the other is to make the patient comfortable, and you cannot do the latter without giving the proper contour, preventing the packing of food and the producing of havoc in many ways. But Dr. Wallace has gone to a greater extreme than I could afford to go; he has trimmed away more of the enamel and dentin than I could perform on my patients. Anyone can perform an operation in the mouth if he inflicts unlimited pain; it is like the surgical operation which was very fine, though the patient died. So with this case—you make a good filling, but you kill your patient doing it. A separation of the teeth is almost imperative; otherwise you will fail, both by decay and in making your patient uncomfortable. The principle involved is one we are all so familiar with that it is hardly necessary to elaborate.

Dr. M. C. Marshall, St. Louis: I should leave the contact point as it should be, but would cut the lingual wall under all circumstances. While Dr. Wallace did not use the term extension for prevention, in his illustrations the doctrine of extension for prevention is liberally carried out. This is a wholesome doctrine, but a great many of these new things have become hobbies and have been ridden beyond all degree of conservatism. This doctrine may result in the destruction of many pulps that might be preserved.

Dr. H. S. Lowry: He said that the contact point should be similar to the contact point between two marbles. That would imply that there was a V-shaped space running to the contact point, which would invite food. I think he must have meant the contact as of two marbles linguo-buccally, but not gingivo-occlusally.

Dr. H. H. Sullivan, Kansas City: Does Dr. Wallace not find that the proximal surfaces differ in the four basal types? That being true, as a consequence the two marbles would not represent all the types you would find.

Dr. W. L. Reed, Mexico: Dr. Wallace has taught me much about the contact point, the shape of the contact point and the

contour of the tooth. He can make a cavity this size with less pain than anyone would think possible. But it is too difficult to make this filling on the distal surface. I think it is so much easier with gold inlays.

Dr. Edw. A. F. Wulze, St. Louis: I would like to know what method he uses in separating the bicuspids and molars to gain space.

Dr. Sullivan: I particularly want Dr. Wallace to speak about these square corners at the base of the cavity, either anterior or posterior, and on the buccal or lingual cervical margins. And why is this cavity cut to nearly a point instead of being left round, as is usually done?

Dr. Wallace (closing discussion): If you were going to turn a box over would you prefer a square or a round box? If it is barrel-shaped it will roll easier. I use right angles and flat seats because the filling then is much more square than if the cavity walls are oval. It is easy to see that a filling lying against a flat wall and a flat surface coming in contact with it is much harder to displace than if it is oval. As to how I separate the teeth, I have no definite method. I use cotton, strings, guttapercha and separators. If I have the time I prefer guttapercha. If the patient can come at stated intervals and let you clean out the cavity and wipe it with a little oil of eucalyptus, when you go to work on it you will have a cavity that is not sensitive.

A few weeks ago a gentleman came to my office with a separation of three or four months' standing and said: "I hate mighty bad to have you go to work on that." But he never flinched while I was at work on it. He expressed his surprise at the ease of the preparation of those cavities. Dr. Lowry spoke of the preparation of the cavities. It would be surprising the small amount of tooth structure I cut away over and above that in the first picture. I would not come closer to the pulp unless the pulp ran out in an abnormal position. You just want to cut it out square. The angles are beveled square. You don't go straight in. These angles are not cut excessively.

In regard to the pain—if you will remember how easy it is to cut yourself with a razor, with how little pain, though if you scrape yourself with a caseknife you howl with the pain, you will

see how important it is that your instruments be properly sharpened. I have fourteen of Dr. Wedelstadt's chisels, and you can reach almost any cavity except the distal surface of the molars. If you have them so sharp that they will trim the surface as a carpenter's plane does, you will prepare your cavity with but little pain to the patient. I use the engine, probably, one-half as much as I did a few years ago, and I have saved my patients much pain. In regard to Dr. Reed's remark, it is difficult to prepare the cavity in the distal surfaces, but I do not see how it would be much easier to make an inlay. There has been a great cry all over this country about the needless sacrifice of tooth structure to make cavities self-cleansing. The very people who make the greatest noise sacrifice more material to put in an inlay. No inlay is stronger than the cement that holds it in place, and if there is any perfect cement I have failed to hear of it.

ACTION OF TROPACOCAIN AS A LOCAL ANESTHETIC.

BY B. L. KISSEL, D.D.S., JOPLIN, MO. READ BEFORE THE MISSOURI STATE DENTAL ASSOCIATION, AT SPRINGFIELD, JUNE, 1906.

This peculiar drug not being well known, I shall endeavor to bring before the profession an account of some of my experiences of its action.

Tropacocain ($C_9H_{14}NOC_7H_5O$) is a compound belonging chemically to the class of tropienes. It was isolated by Geisel from a narrow-leaf coca plant from Java. It is obtained as an oil, which when quite dry solidifies in radiating crystals, melting at 49 degrees C. It has a strong alkaline reaction, and is easily soluble in water, alcohol, chloroform, benzene and petroleum spirit. It is decomposed by heating with hydrochloric acid into benzoic acid and pseudo-tropiene ($C_9H_{15}NO$).

Tropacocain acts on the system somewhat similar to cocain. Its physiological effect is much less toxic. It acts first on the respiratory system by paralyzing it. In addition to that it has a tendency to produce cold, numbness and swelling of tongue and throat, with a dryness, thereby cutting off circulation of air and causing a choking effect. The action on the heart is similar to

that of cocain, it being a cardiac depressant, but it has much less poisonous effect than cocain. It has a strong, bitter, slimy taste. Dose, one-third to two-thirds of a grain.

As a local anesthetic it is more powerful, prompt and prolonged in its action than cocain. To determine the strength to be used for obtaining best results relative to its anesthetic properties, I concluded that a series of experiments would be necessary. In carrying out my experiments I used tropacocain in different percentage solutions. The following is the result:

Case 1. A man about thirty-five years of age presented himself to me to have a left lower first molar extracted. I proceeded to cauterize the spot for the insertion of the needle with carbolic acid, to make insertion painless and prevent any leaking or washing out of the anesthetic. I used an 8 per cent solution, injecting about five drops, which was approximately two-fifths of a grain. I extracted the tooth with little or no pain. After a short time strangulation set in, the action on the respiration was decided, while the action on the heart was not so severe. I placed him in a horizontal position and gave him a heart stimulant—amyl-nitrate, two drops, by inhalation—which acted quickly, but the respiration was still the same, so I concluded to administer a dose of strychnin, one-fortieth of a grain, internally. In less than ten minutes the action of the drug had apparently subsided. The peculiarity of this case was that the action of the respiration was so marked and on the heart not very effective. Nevertheless the effect was such that I used no more 8 per cent solution.

Case 2. A man about fifty years of age, with fatty degeneration of the heart, presented himself a week afterward to have a left lower third molar extracted. He did not state the condition of his heart before I commenced work, so I proceeded to inject a 5 per cent solution, about ten drops, which was approximately one-half grain. I first cauterized the place for inserting the needle to prevent any washing out, but it seemed to be washed out by the blood; at any rate the gums were somewhat inflamed and blood pressure was so great that it washed it out in spite of all, getting it on the tongue and in the throat. An immediate swelling of the tongue and throat caused a choking effect; the heart almost stopped beating. I gave him heart and respiratory stimu-

lants and soon had him out of danger. The tooth was extracted just as he lost consciousness, thinking the shock would revive him, but found that it was more than a mere collapse. The extraction, however, was painless.

Case 3. A young lady about eighteen years of age came for the extraction of two lower molars. I injected in the usual way, and removed the teeth without pain. But as she was about to leave the office she fell to the floor, relaxed, seemingly in a paralyzed state. She was in a helpless condition. There was a rather peculiar action on the nervous system. She was in a semi-conscious state, and for quite a long time after regaining consciousness she could not raise a limb, for temporary crural and bronchial paralysis set in. After twenty minutes I called in an M.D., and with his assistance, after administering nerve stimulants, we succeeded in bringing her out of that state.

The decreasing strength has given me better and more prolonged anesthesia, for it does not seem to be absorbed so readily. In this case the anesthesia worked splendidly with the exception of the physiological danger of the drug, which had to be overcome.

Case 4. A man about sixty years of age presented himself to me, after being turned away by dentists of my town, to take out nine roots, all fearing the condition of his heart, which was valvular trouble. I examined the case and found that the teeth were pretty well broken down, so I proceeded to try my tropacocain, thinking this to be a good opportunity for testing its toxic effect. He stated he had a tooth extracted in a dental parlor a year previous with cocain, and that he took convulsions and was close to death. I administered some aromatic spirits of ammonia as a heart stimulant and proceeded to freeze the gums with the ethyl chlorid spray to make insertion of needle painless and assist the anesthetic property of tropacocain. I was cautious and used very little tropacocain. The result was very good—no pain and no constitutional disturbances whatever. So I continued the same method with the other eight teeth and had not the slightest trouble.

After a few other experiments with lower percentage solutions I find that by reducing the strength to about 2 per cent solution I get better results, both as to the extent of anesthesia and also

lessening the toxic danger. The anesthetic property is enhanced by the use of lower percentage solution, for more can be injected with safety, and hence deeper infiltration of the tissues, which is necessary in the extraction of teeth to get profound anesthesia.

Since reducing the strength of the anesthetic to a 2 per cent solution I have given some thought to other drugs in combination to increase its anesthetic value, and having ascertained the value of chloretone as an obtundent in odontalgia, I thought that it would increase the anesthetic property of the solution, which it has; and also being an antiseptic, it has won favoritism with me.

Adrenalin in connection with tropacocain as an absorption-checking agent, as so many claim for it, has had my attention, but my experience has been unfavorable. I find that it is a powerful styptic, but it has a tendency to hold the tropacocain in the tissues and prevent its outflow, increasing its absorption rather than retarding it; whereas, when not used after laceration of the tissue it will be washed out with the blood and absorption will not occur, so I discontinued using it.

Now, to prevent the toxic action of tropacocain or render its toxicity still less dangerous, I added spirits of glonoin, and we now have an ideal antiseptic local anesthetic, which has the following formula:

Tropacocain	gr. xvj.
Chloretone	gr. x.
Spt. glonoin	gtt. xvj.
Water	℥ij.

Sig.—Boil water, then add ten grains of chloretone, or as much as the water will dissolve, for it is only soluble to the extent of 1 per cent.

Action.—The susceptibility of the patient to the action of a drug like cocain cannot be ascertained before first submitting him to its effect, and consequently, if due precaution of all points of administration is taken, it will avoid physiological disturbances; it is practically without danger. A few important factors enter into consideration of this question.

1. The condition of the patient.
2. The strength of the solution.
3. The position of the patient.
4. The mode of injection.

The effect of tropacocain on the nervous system as well as upon the respiration is analogous to cocain, only that it is much less dangerous in its action, as a larger quantity can be used with more safety. For example, an equal amount of cocain has produced dangerous symptoms, while on the contrary neither respiration nor the nervous system appears to be influenced by doses of one-third of a grain of tropacocain. Although its use is not without danger for the negligent operator, it is undoubtedly much less toxic than cocain. The advantages of tropacocain over cocain are:

1. Used in equal doses sufficient to produce local anesthesia, the physiological effect is two times less toxic than cocain.

2. It produces anesthesia more rapidly, more pronounced and of a longer duration.

3. It does not cause ischemia or congestion of the mucous membrane; it is less apt to produce fever, after-effects and other complications, which we sometimes get from the use of cocain.

4. Unlike cocain solution, it does not deteriorate and can be kept for months, while cocain solutions, after a few days, become worthless for injections.

5. It can be boiled without decomposition.

I am now using the above formula exclusively, and since I began to use it, which is about one year, I have yet to find a single ill-effect. It is entirely safe, for a whole drachm of the fluid can be injected with safety. At times, in a weak and exhausted patient who has been under nervous strain for nights previously, cerebral anemia may be established, as the drug is a vaso-constrictor, and being administered in an upright or sitting position prevents the blood from circulating through the brain. This condition may occur any way, for the thought of the operation will sometimes cause the patient to faint, so practically it is not due to the drug. It may be overcome by placing the patient in a horizontal position. It is scarcely worthy of mention.

In conclusion, I will state to those who use tropacocain: Be careful in its administration; see that your syringe does not leak; and in relation to the quantity injected, see that you do not exceed the dose, and you will have splendid results.

DISCUSSION.—*Dr. J. D. Patterson,* Kansas City: I would cer-

tainly consider it a questionable practice to use injections of cocain in the case of a patient with valvular heart trouble, no matter what the solution of cocain might be. That is the one of all other anesthetics that must be abjured when there is any valvular heart trouble. There is more danger in such a case from cocain than from any other anesthetic. I would only advise, instead of using injections of any character for the extraction of teeth, the use of nitrous oxid gas. The effects last long enough for the purpose for which we use cocain. We know the safety of nitrous oxid gas. We know the other is not safe. The experience of the essayist should convince any reasonable man that so long as there is any other method at hand that can be used without danger he should take that and leave tropacocain alone. Even if he thinks that he has now a composition absolutely safe, yet we know that sometimes in cases of unsuspected heart troubles there have been serious consequences from the use of less than one-half of one per cent cocain solution. I see no reason why an intelligent and scientific man, if he can obtain the results more readily and more perfectly with nitrous oxid gas, should not adopt the safe plan. It is the duty of the dental profession to do that. The tissue injected with cocain sometimes recovers very slowly.

Dr. W. E. Tucker, Springfield: I have had no experience with the drug, but I will say this, that if I had ever had the experience the essayist had with three cases in succession I would want no more tropacocain. It was pretty risky starting with an 8 per cent solution. I am so careful with my solution of cocain that I hardly use it at all.

Dr. Kissel: The remark made by Dr. Tucker in regard to my having this experience with three cases in succession prompts me to say that I have had this experience within the last two years, not in succession. In regard to the 8 per cent solution, I did not exceed the dose in the injection of the solution. I used not more than one-half of a grain, which is not exceeding the dose at all.

Dr. W. B. Dickson, Hermann: In a practice extending over fourteen years I have used cocain in all forms and strength, and I have had patients collapse without any cocain, and when only a weak solution had been used; and it is a question in my mind whether the disastrous results are due to the drug itself. It may

be due to shock or to an overdose of the drug, because I have seen dentists inject cocain into the gums as though they were putting out a fire. This is unnecessary. The first thing a dentist ought to do when a patient comes to him for the extraction of a tooth is to allay any excitement. They are always nervous and often on the verge of collapse. It is absolutely necessary to allay that excitement, for if you do not, whether you use a local anesthetic or not, you are likely to have a collapse. You need only a drop or two of the local anesthetic, at most—only enough to anesthetize the gum so you can take hold of the tooth without inflicting much pain in the gum, and you will find it ample. Further than that it does not do much good.

Dr. H. S. Lowry, Kansas City: About sixteen years ago I read a paper on the subject of cocain before the Kansas State Dental Association at Topeka. When writing a paper on a subject you make a very thorough study of the subject, and the writing of that paper was of much service to me in my use of cocain afterward. At that time I do not believe there was a man in the house who agreed with me. Well, it did not discourage me at all, and I have used cocain ever since, but the handling of cocain has taught me many things I did not know then. The strength of solution I have used in later years has been not so great as I used then. I never have used over 4 per cent, and have dropped down to 2 per cent. I use cocain prepared by Parke, Davis & Co. I think many of the results are due to the manner in which it is used. In injecting cocain into the gum tissue I am very careful not to allow my needle to extend to the muscular tissue. If you will inject it into the hard gum tissue with the cervical edge the absorption is so slow and so mild that you cannot get very serious results if you do not use too much. You might as well say that morphin should be discarded as to say that cocain should be discarded. It is too valuable a drug. I use it in all minor operations. Of course, I do not extract teeth now, but I used to, and used it a great deal for that purpose. I never had any cerebral anemia and fainting, but I have had nausea, which never frightened me. I have never felt it necessary to use anything to counteract the effect of the cocain, but I think it is because I use a mild solution and but little of it, never enough to allay all

the pain, but sufficient to prevent the excruciating pain. When I was extracting teeth I did not attempt to allay all the pain. I think the safety in the use of cocain depends upon the care with which it is used.

MY IDEA ON CONSTRUCTION OF BRIDGEWORK.

BY S. D. SOASH, D.D.S., JOPLIN, MO. READ BEFORE THE MISSOURI STATE DENTAL ASSOCIATION, AT SPRINGFIELD, JUNE, 1906.

When I received notice of this meeting, with a pressing invitation to be present and give a clinic or read a paper, it called to my mind the days when I taught school and the benefit we received from our Teachers' Association, which we looked forward to with the greatest anticipation.

Inasmuch as I have dropped out of the teaching ranks and have been permitted to enter the profession of dentistry, I felt it my duty to fill out the card, stating that I would be present and lend an effort to make this meeting a success.

In order to bring my paper within a reasonable time limit I have purposely omitted the history and growth of bridgework, since there have been splendid articles in the leading dental journals reviewing this particular phase of the subject.

As the successful practice depends upon the mastery of the underlying principles, plus inventive genius and mechanical skill, governed by sound judgment and perfect candor, with the interests of the patient paramount to every other consideration, I shall consider only the essential points which lead up to the successful replacement of the lost teeth with fixed bridgework.

For convenience I shall consider the following classification:

First. What cases are suitable for bridgework?

Second. Reference to the preparation of abutments and the kind of anchorages to be used.

Third. Dummies, with the restoration of the articulation and anatomical contour.

First, bridgework is indicated wherever the patient has good second or third molars and cuspid teeth on the same side of the arch, upper or lower, provided the supporting tissues have not been wasted away by disease. I shall refer to a few special cases.

1. One-tooth extension, first molar lost, second and third molars badly decayed. Restore second and third molars with full shell crowns, attach crowns and swing first molar dummy, giving special attention to the proper knuckling of dummy against second bicuspid.

2. One-tooth extension either way, first bicuspid, first and third molars lost, second bicuspid and second molar in place, opposite teeth in position. Crown second bicuspid and second molar teeth and swing dummies.

3. Cuspid and first molar lost, bicuspids in place. Crown bicuspids, attach and swing cuspid and molar dummies.

4. Lateral missing. Use gold inlay with dowel attached in cuspid and gold inlay in central, swing dummy.

5. Central and lateral lost. Use gold inlay with dowel attached for each anchorage, except the teeth be badly decayed; then post and plate crown. This method can be extended to carry the front four.

6. The upper front four lost, lower front four elongated, protruded and loosened with pyorrhea. Extract lower front four and replace same with bridge, restoring the natural alignment so that the upper bridge can be placed to give the natural and esthetic appearance desired.

Passing to the second division, the preparation of abutments and the kind of anchorages. Briefly, the long axis of the abutments to be parallel, the stumps to be slightly cone-shaped, with the largest circumference just under the free margin of the gum. The anchorage to consist of the all-gold crown, the post and plate crown (bandless Richmond), the gold inlay and the gold inlay with dowel attached. The all-gold crown to be used on the first bicuspid and posteriorly (except in case of a man with heavy jaw and close bite, or possibly on a lower cuspid). The post and plate crown to be used anterior to the first molar were indicated. The gold inlay or the gold inlay with dowel attached confined to the front six.

I use the seamless system in making the all-gold crown—first, because of the certainty of a more perfectly shaped crown than by any other method; and secondly, because of its perfect adaptation at the cervical margin, with no line of solder showing, using

30-gauge 22k gold, reenforcing sides and cusps with 22k gold solder to make it rigid and obviate any possibility of the dummies' support tearing away under stress of mastication.

The gold inlay is indicated where one dummy is to be swung, the opposite anchorage to be a gold inlay with dowel attached or a post and plate crown. The inlay with dowel attached is indicated at each attachment where the upper two, three, or possibly four, dummies are to be swung, provided the teeth are solid and well formed and can be easily matched to give the esthetic appearance desired. The dowel to be made of No. 14 to No. 18 iridio-platinum wire and extending as far up the root canal as possible, cutting an oval-shaped cavity extending to the approximal surface for the inlay; burnish in cavity 36-gauge platinum, insert dowel, remove and tack with 22k solder, allowing dowel to extend down as much as possible below inlay as not to interfere with the occlusion, which will mark the impression and assist in getting the correct alignment of dowel on model.

The post and plate crown is indicated where the teeth are frail, irregular and badly decayed. In the preparation of the root to receive the post and plate crown, grind to conform with and under the free margin of the gum labially and within a line of the gum lingually. In the construction of this crown use heaviest iridio-platinum wire, with longest length suitable to the root, using 33 or 34 gauge platinum for plate; burnish to conform to root and finish in the usual way, except to allow the plate to extend only within a line labially, and grind facing to a perfect joint at the cervical margin. A narrow flange is permissible in case of a frail root where the overbite is excessive.

The third division, dummies, with the restoration of the articulation and anatomical contour, having correct models mounted on an articulator, giving the lateral motion. If the bite be close, with heavy jaw, and there is a doubt as to the practicability of using the porcelain veneer, use the solid gold dummies, especially the bicuspids and molars, but where the bite will admit use the porcelain veneer.

In the construction of the dummies use the thickest facings from labial to palatal sides, grind the cervical portion to conform to the alveolar ridge and wax into position; outline where bases

rest on model, remove facings and scrape model where facings rested the thickness of a sheet of cardboard. The facings are backed with gold to the cervical margin and fitted in place, the cusps made slightly narrower from labial to palatal sides than were the natural teeth; wax cusp and facing together, giving special attention to the articulation and contour, remove and invest, filling each dummy separately with 22k solder.

In assembling the bridge for final soldering, give due consideration to the articulation and restoration of facial contour and tack with 20k solder. When the bridge is finished and inserted it will uniformly indent the gum to the depth the plaster was removed, which will exclude particles of food and give a comfortable feeling to the tongue. Remove wax from dummies and assembled bridge with boiling water; do not burn out the wax, as the carbon resulting therefrom will cause the finished work to be pitted. Use just enough powdered borax to insure the flow of solder, being careful not to get any on the porcelain. Always reinforce investment with wire; when set, dry thoroughly over a slow Bunsen flame at least two hours. In final soldering, increase heat slowly and evenly, using a large brush flame, taking from eight to twelve minutes in getting to red heat. Do not disturb until cool. If you have a checked facing it is due to carelessness in either applying the borax or heating too rapidly.

The causes of bridgework failing to give permanent results can be briefly summed up as follows:

First. The anchorage was an open-faced crown or a banded Richmond, causing gum recession with the dissolving out of the cement, allowing decay to weaken the abutments. When under stress the root will fracture or the tooth break off, and the bridge is lost.

Second. Not properly reinforcing porcelain with gold on cutting edge, which is chipped off under stress of mastication.

Third. Hollow gold dummies giving way, the cause being the drawing of the solder in making dummy or in final soldering.

Fourth. When one dummy is supported with only one anchorage; if the occlusion is normal the leverage is sufficient to set up an inflammation, resulting finally in the death of the pulp and necessitating its removal.

In conclusion I would say, give the public the class of work that will be permanent, replacing the organs of mastication, restoring the facial contour, improving the speech and esthetic appearance, thereby removing erroneous ideas and insuring the professional and public indorsement of this important branch of our work.

DISCUSSION.—*Dr. R. E. Darby,* Springfield: To-day conservative bridgework is of great benefit to mankind. I compliment the essayist on the position he has taken in building for strength and durability. He has restricted himself to those cases for strength and durability, and has excluded the all-porcelain bridge. To meet the special requirements of a good bridge worker one must be skilled in surgery and mechanics, must have much of the make-up of the artist and have trained fingers. In illustration No 3 I would rather risk a one-anchorage bridge. There is too much see-saw in this bridge during mastication. If he had there a shell crown or something to add strength it would solve the problem. Then, in No. 4, if that is made with care it will last, but as a rule I would prefer but one anchorage there. A cuspid is usually sufficient anchorage to carry out that plan. If the dummy is large I do not care to do that, but with a strong root like a cuspid and a small dummy, a shell crown or post and plate crown would make a durable piece. He should not expect to make the piece and then cut the root to fit it, but *vice versa.*

As to the seamless method in making gold crowns, that is a matter of personal equation. Porcelain in some form is preferable. In the case here the object would be better served by the use of a porcelain face. If we would use 22-karat in soldering there would be less complaint about the color.

As to anchoring with inlays, there are some splendid anchorages in that way, but we may go to extremes, for in this kind of work they are built for strength. In most of these we can build for appearance, but we must build for strength. I would rarely use a gold crown on the first bicuspid. You can build for strength and still do no violence to the esthetic.

Dr. L. A. Young, St. Louis: The first case is an excellent one for this extension, but there is one point I want to bring out, and that is to make the crown on the second bicuspid a little stronger. The only thing he depends upon there is about 30 or 32

gauge gold, 22-karat. I think that very weak. One of my methods is to double a portion of that gold extending two-thirds of the way around. Another is to embed the iridio-platinum wire, about 14-gauge, which, extending across, will strengthen the bridge very much. I always use the iridio-platinum wire, as I have seen a number of cases where the shell crowns were torn to pieces by the leverage. Another method of strengthening would be the use of cast cusps.

In the second case I would leave off that third molar. Again, instead of a gold shell crown on the bicuspid I would use some porcelain. In the case of an upper tooth I would use the facings. In using the porcelain I always try to arrange the facings so that the bite does not come directly on the porcelain. As to inlays for bridge supports, I do not know how many years ago I commenced that, but discarded it very early. I think they are failures in nearly all cases. If we are going to cut away enough of it to put the pin in the root, I do not see why you could not cut it off and put on a Richmond crown. If you have a patient whose bite is not too strong you can sometimes anchor a lateral to a central. In case No. 5 I should use a Richmond crown. In case No. 6 he extracts the lower incisors because of the pyorrhea. He has given up trying to cure the pyorrhea, but I do not believe in many bridges in pyorrhea cases. I should prefer a gold plate nearly always.

Dr. H. S. Lowry, Kansas City: In No. 1 I would not attempt to swing that as a leverage, but would crown with gold. I never use less than 28-gauge gold for bridgework, and do not use the seamless crown. Sometimes the lower teeth are not shown in laughter; if so, I would cut off the inner cusp and attach a dowel pin to the plate for anchorage. A dowel pin is the strongest anchorage except a gold crown, and will last longer because there is no danger of decay at the cervical border. I would use no facing and no buccal surface at all. What is the use of a buccal surface on the lower bridge? It is a food-catcher.

In No. 2 I would cut the inner cusp and use a dowel plate and swing this on. A three-anchorage bridge is never as good as a two-anchorage bridge. You can grind off as much of that cusp as you want, leaving the inner face as it is. Make your bridges as

hygienic as possible, for they are filthy at best. In No. 5 make two dowel pins, show no gold whatever and make them absolutely durable. Destroy the pulp in the bicuspid teeth and make the same anchorage. If the teeth can be preserved, cut them off and polish them. If very loose and of no further use to the patient, take them out, as the essayist suggested. Make an opening in the rear of the tooth, obtund the dentin and anesthetize the pulp by pressure anesthesia. There is never discoloration in teeth freshly desensitized. I cannot afford to show gold in any place in my practice. I would never think of cutting this tooth off and putting on a Richmond crown. You have a healthy pulp and you are more apt to split that root than if you have a longer pin. The shorter your pin the more leverage. You can split the root with a Richmond crown, and I never cut a tooth off for anchorage for a bridge when able to put in a pin.

Dr. Soash (closing discussion): I would absolutely crown that second bicuspid with a full shell crown, but for the third molar being in the condition I described. In No. 3 Dr. Darby thinks there should be something to add strength. That bridge has been in the mouth two years and is still in perfect condition. There is no reason why it should not give service as long as the man has use for it. In case No. 4 my experience has been that the attachment to the cuspid only has not been a success except in cases under twenty years of age. In the last year I have removed four or five bridges that had been attached with one anchorage only. There was an irritation set up with this one anchorage. If the occlusion is normal it causes an irritation until you get your bridge anchored across. Give it a base, and when you get relief from that strain you will get results. I admit that if you swing that dummy up you will have durability as well as strength. I would call attention to the fact that the second bicuspid was crowned first; after two or three years it began to give trouble, and the case drifted into my hands; the pulp dried and I had to remove the bridge; I could find no other cause than the constant irritation of the leverage. I believe it is a fact that the teeth will not discolor when the pulp has been removed under pressure anesthesia. I recently saw some teeth that had had the pulp removed four years ago and they still looked fresh.

Digests.

METHODS OF BLEACHING TEETH. By G. Fisher, L.D.S., Glasgow, Scotland. I wish to bring before you the general action and properties of those chemical elements and compounds used in dentistry to obtain a more natural, *i. e.*, a whiter color in a discolored tooth in the mouth. It is impossible to show in the small time at my disposal any actual experiments on tooth substance by any of these agents, as the action of the bleaching of a tooth may take from an hour to some days, and a dead tooth is more difficult to bleach than a living one. I am indebted for most of my information from "Notes on Materia Medica for Dentists," by Gabell and Austen.

Sound enamel teeth cannot be stained interstitially. The green stains, tobacco stains, and others like them must be removed chiefly by mechanical means, with the assistance of iodin, followed by ammonia. Carious enamel, of course, is removed as thoroughly as possible. When teeth are discolored it is the dentin that is involved, and the enamel (being translucent) shows through.

Dentin stains may be caused by:—

(1) Contamination from the mouth, viz., by tobacco, tannin, iron, port wine, etc.

(2) Chromogenic bacteria.

(3) Metallic stains from amalgams, $AgNO_3$, $CuSO_4$, Nl. posts or the effect of drugs on gold fillings.

(4) Drugs used in treating teeth, viz., iodin, essential oils (especially ol cinnamon), tannin, creasote, aristol, beta naphthol, and others.

(5) Hæmoglobin and its derivatives from decomposition.

The first step in bleaching is to remove all the softened dentin, and as much of the discolored part as is practicable, and if the pulp is dead, to cleanse the cavity thoroughly.

Metallic stains are difficult to treat. The most approved method is what is known as the chlorin method. This is usually accomplished by the introduction of bleaching powder (freshly prepared), moistened with a dilute acid, usually acetic, 5 per cent. solution in water, to help to liberate the chlorin in the compound. This method has the advantage that it can be sealed in the tooth and left for twenty-four hours, and then repeated if necessary.

Another method is to prepare a fresh solution of chlorin gas in

water, and having isolated the tooth to be treated with rubber dam, to keep on applying fresh chlorin water to the cavity from time to time during a sitting. Before proceeding further, I ought to state that in all operations of bleaching, the rubber dam should be used; also that no metallic instruments except platinum must be used, or wood. A method I myself have used to prepare any steel instrument—we may have to use especially a pair of tweezers—is to get a cheap pair of college pattern tweezers and carefully wrap the points with waxed floss silk, and then dip the ends in some hard drying varnish and leave to harden before use. Oxidizing agents are the most effective in bleaching organic drug stains. Ammonia will remove iodin stains.

Stains in teeth produced by death or hyperæmia of the pulp are due to deposit of hæmoglobin in the dentin; this by metabolism becomes reduced hæmoglobin, and shows more or less black. Also, admission of air and chromogenic bacteria to a dead tooth through the pulp may lead to rapid discoloration of the tooth.

The bleaching of a discolored living tooth may be easily effected by applying a solution of caustic pyrozone, syringing with warm water, and finally with a solution of white shellac in alcohol, drying with hot air syringe, and filling or at least lining with a white zinc-oxyphosphate.

The methods of bleaching teeth depend on the action of either oxygen, sulphur dioxid, chlorin, or iodin. The first three act by forming new colorless compounds with many pigments, and the last acts by rendering the stain soluble.

Dead teeth may be bleached by thoroughly removing the pulp contents, repeatedly washing the pulp cavity, and thoroughly sealing it with a guttapercha point to about half the length of canal from the apical foramen. This is to enable us to get some way down the canal with our bleaching agents.

Now we will assume that the tooth be stained by hæmoglobin or its derivatives. After adjusting the rubber dam, a saturated solution of sodium peroxid on asbestos wool (as it dissolves ordinary cotton wool), or in the original form of dry powder, is introduced into the cavity by means of a wooden or aluminum instrument. The powder rapidly absorbs water from the atmosphere and becomes a soapy mass, due to the liberation of nascent oxygen and formation of NaHO; this saponifies contents of dentinal tubes, etc., and is

then washed out with warm water. If color is not restored after washing, apply caustic pyrozone after drying cavity thoroughly. The action of the caustic pyrozone may be made quicker by rendering it alkaline with a drop of ammonia. Dry out, and repeat treatment several times at a sitting. Then seal in cotton wool saturated with caustic pyrozone, and leave twenty-four hours.

If a brown stain persists, apply a dilute solution of oxalic acid, and quickly wash out cavity with soda carbonate and plenty of hot water. Desiccate the dentin with a hot air syringe, then saturate the interior dentin with white shellac varnish, harden with hot air and fill with white osteo or line it for insertion of porcelain, gold, or amalgam.

The above saturation of the dentin with white shellac varnish tends to fill the dentinal tubes by capillary attraction if they are previously desiccated, and so tends to bind the tubuli together. This is a method we might find advisable to apply in all cases of dead teeth, even if they are not discolorized, before filling with amalgam or any metallic filling. It will prevent at least the staining of tissue due to metallic stains.

Teeth discolored by metallic stains, such as amalgams, are more difficult to treat, and in some cases we may fail to reach perfection. The chief stains are due to silver, iron, nickel and copper. These are first treated with iodin or with chlorin. The chlorin method consists in packing dry bleaching powder into the cavity and saturating it with 5 per cent acetic acid, and sealing in for about twenty-four hours, repeating if necessary, or using freshly prepared chlorin water at a sitting. This method turns the stain into a chlorid of Cu, Ag, or Hg, as the case may be.

Gold, copper, nickel, and iron give soluble chlorides which can be washed away. Silver and mercury are insoluble, and require to be chemically treated. In the case of mercury a saturated solution of KI. is used. The chlorid of silver is dissolved out with fixing salts (soda hyposulphite), and should be used after first washing with both these salts.

Stains of potassium permanganate may be removed with peroxid of hydrogen or sodium sulphite.

I have not touched upon sulphur in the form of sulphur dioxid. It is produced by packing the cavity with a mixture made by mixing 100 grains of soda sulphite and 70 grains of boracic acid, and then

saturating them with water. There is a certain amount of acid reaction, and as it requires to be left in some time, this acid reaction is a possible danger to the enamel.

Special care must be used to make a solution, as so much heat is liberated on adding water that solution decomposes. Add the sodium peroxid to the water in very small quantities at a time and surround the test-tube containing the water with ice.

The experiments are a preparation of chlorin gas and making a solution of same in water, opening a tube of caustic pyrozone, preparation of peroxid of hydrogen, also tubes showing bleaching properties of the various agents.—*British Dental Journal.*

THE EDUCATIONAL PROBLEM. By Charles S. Butler, D.D.S., Buffalo, N. Y. Read before the National Dental Association, September, 1906. I have prepared this paper at the earnest request of the chairman of Section II, and in its presentation shall offer for your consideration four propositions, the combination of which, in their working out, is designed to effect a complete though, perhaps, not a perfect change in our entire educational system.

(1) The abolition, by gradual absorption and elimination, of all our present schools, and the substitution therefor of departments in strong universities, with faculties selected by the profession itself, and for which each teacher shall be chosen with due consideration as to his known fitness to fill the position he is to occupy.

(2) The abolition of State Examining Boards as being superfluous and of doubtful utility in any system of professional education.

(3) The creation of a national commission with plenary powers in regard to location of the schools, curriculum of study, and entrance requirements, as well as general oversight of their affairs.

(4) The diploma of said schools, when granted in course and indorsed by the national commission, to be accepted as a license to practice in any state or territory of the United States.

When, in 1839, men desiring facillties for adequate instruction in dental subjects were denied admission to medical schools, and their suggestion of a dental science was spurned with contempt as being beneath the dignity of men in charge of those institutions, the great science of medicine and surgery was set forward to a degree not easily understood by any at that time, and scarcely realized or ap-

preciated by us today; for it is to the enforced establishment of separate and independent schools for teaching dentistry that is due in large measure the development of microscopy and the marvelous advance in our knowledge of histology, pathology and kindred sciences, as well as the wide application of antiseptics—for it was men engaged in the study of dental sciences who led the way and gave the impetus to their development. To it also may be traced the wide introduction into the curriculum of our public schools of a system of manual training, the application and thoroughness of which is preparing as never before a generation of youths to enter upon a life-work of usefulness and profit But great and far-reaching as these have been, its greatest influence, undoubtedly, has been in leading to the development of a system of dental instruction, peculiar to itself and in some ways not surpassed in efficiency in any other field of intellectual activity.

But notwithstanding its efficiency and apparent thoroughness, it is a serious question whether its limit of proficiency has not been reached; whether, indeed, there has not been a marked retrogression in the results of its operations during the past five years or more. To one who has been a close student for more than a quarter of a century, and always deeply interested in everything pertaining to our educational matters, this seems to be true; or to state it in another way—that our entire educational fabric is falling apart under the stress of its own weight. But, be this as it may, it certainly is true that the time has fully come when the profession itself should lay hold of this whole question seriously and with a determination to put our educational affairs on a plane relatively as high as that of the other learned professions. To do this some radical change of methods must needs be adopted; the number of the schools should be gradually reduced, and the quality and character of those remaining greatly enhanced. This may be done in two ways, but preferably, perhaps, by a gradual elimination of those schools now in existence by their combination with and absorption into departments in strong universities centrally located in different sections of the country, thoroughly established and well grounded in the true university spirit, and in the midst of large and prosperous communities.

Those of you who have observed closely the trend of educational matters during the past half-dozen years must have been impressed

with two things—first, the inability of our present system to meet the demands of the profession; and, secondly, the unmistakable tendency toward university departments in the schools themselves. That these things are observable is matter for congratulation, as at least showing a disposition on the part of the schools and of the profession to be dissatisfied with present conditions, and is a healthful and encouraging sign. It is a new spirit with us, and should not be repressed or discouraged; on the contrary, we should welcome it and seek to direct its energy. It does not follow that because men are dissatisfied that they are disaffected. All reforms and changes are awakened by dissatisfied men, but by disaffected men, never. This trend toward university departments, therefore, awakened by men dissatisfied with present conditions, is evidence of their own earnestness, and is readily explained and easily understood when the alliance is sought with universities where all of the departments are under one general management, where all of the teachers are employed at fixed salaries, and where the funds are used for the symmetrical development of the whole university.

The advantages growing out of an alliance of that character are so obvious that no institution concerned at all in its own welfare could afford to neglect it. But, if it were possible for all our schools to be thus situated, which of course it is not, even then not all that is needed by the schools or is demanded by the profession could be realized; so that, while we may congratulate ourselves on this manifestation of a desire for better things, we cannot rest satisfied with this alone, even though it does offer advantages not easily obtainable by schools otherwise situated. The community of interests necessarily existing in the several departments of a university—the interdependence of these departments, but more particularly the "fraternity spirit," which means so much and which is so difficult to define or understand, and which can be developed in its highest and best sense only amid such surroundings, are some of the indispensable conditions necessary in the building up of schools of the highest efficiency and usefulness. Educationally speaking, we do not appreciate at its full value the true fraternity spirit. This is not strange; we see so little of it, for it is only to be found amid real university surroundings.

A recent writer in one of our magazines, speaking of Oxford, said: "This fraternity spirit is one of the greatest benefits to be

derived from this old university. While it is not tangible or visible, nevertheless it is a living reality, and its potent force can be readily felt. It is a subtle influence, which enthuses one and gives him that true love of knowlege which at once marks him as a scholar. It wears down rough positiveness, softens the severity of prejudiced criticism, and cultures and refines thought—that is, true intellectual thought."

Under our present system, if there be any one thing more pronounced than another, it is that "rough positiveness" here referred to, for our entire educational training, as well as our professional practice, is made up almost wholly of dogmatics, and it is only by widening our intellectual horizon, through the medium of a truer appreciation of the value of the interdependence one upon another of the various departments in great universities, that we as a profession can hope to grow.

No profession can live unto itself alone, and continue to live. If it try to do so it will inevitably become, sooner or later, a dying profession. It must yield something for the general good, and it cannot retain the good it has already accomplished without striving for more. "In the lives of professions as in the lives of men, there is no level place, nor is there any brake to hold them at rest on the slopes where they are set." They must climb or they must slip. To mount or to fall, to grow or to decay, to grasp more of the spirit of progress or less, more of personal self-sacrifice or less—these are matters of choice; but we must choose, and upon the choice we make will depend, in large measure, the future advancement or certain decay of our profession.

The growth of a profession, like the growth of general education, is a part of development of the whole intellectual life of the nation; and that nation grows best which harmoniously and aggressively identifies itself with the educational needs of its people. It is in the recognition of this law of the intellectual growth of the nation—or rather, the recognition of the needs of a people in their intellectual development—that the foundations of our universities are laid; a fact which we, though one of the younger of the professions, should be quick to recognize and appreciate.

Other and very marked advantages accruing to these departments would be found, not only in the curtailing of the number of schools, but also in the superior equipment, enhanced facilities by reason

of location, environment, etc., and not the least of all in the concentration of patronage, thereby affording advantages not usually recognized, namely, in the stimulus to both teacher and pupil that comes with large numbers. It must always be remembered that it not infrequently happens that the very best work in any school is done by the individual teacher with the individual pupil; but it should not be forgotten that the stimulus and encouragement that come with well-organized and flourishing institutions, where all the activities are running at flood tide, are far greater than with small, struggling, and oftentimes poorly equipped schools, no matter how high their ambitions or how honest their intentions. But the great problem to be worked out in this proposed change is not the recognition and utilization of the advantages accruing from its adoption, but how best to appropriate and assimilate all that is worthy and of value in our present schools. They all have vested interests which must be conserved and of which each and all will be required to yield something for the general good. Just how this is to be accomplished is matter for future consideration. It is no part of the purpose of this paper to discuss that phase of the question, beyond saying that a fair and a workable solution of it is certainly within the bounds of reasonable probability.

As to the abolition of State Examining Boards. In any system of professional education, examination, as by our examining boards, placed upon the products of the schools from without, is unnatural, indicating lack of confidence, if not actual distrust and condemnation. The examination and oversight by the profession should be placed upon the schools themselves, and should be so effective that it would be impossible for vicious and incompetent men to be graduated. This would at once eliminate any possible or fancied necessity for state examining boards, the existence of which has been a direct censure upon our entire educational system. These boards, through the influence of their national association, have done much to lower the standards and to bring the dental degree into disfavor both at home and abroad, besides harassing many of the schools without accomplishing any useful purpose.

To some this may seem like a harsh criticism, and particularly so when we recall the many earnest, unselfish and devoted men who have been active in the work of that association, and who have always intended and desired the very best, both for dental education

and for the profession itself. The criticism is not of the men, but of the false conception on which the association was founded, and the fancied functions it was assumed that it had to perform. It is possible that had the association confined its efforts to the work of organizing and building up the state boards, perfecting and unifying methods of examinations, and in ways that were legitimately possible encouraging and assisting the schools in the real business of education, instead of attempting to dictate as to their internal management and to prescribe their standing and reputability, its field of usefulness might have been enhanced, education advanced, and its formation and existence seemingly justified. I say "seemingly justified," by which I mean under our present system.

But all this as touching the National Association of Dental Examiners has really no place in this discussion, and I have introduced it here only for the purpose of making clear the unscientific and unbusiness-like conditions under which our students are trained.

As to the creation of a National Commission. The desirability of such a commission and something of the functions it might legitimately assume have already been hinted at, and it is only necessary to point out specifically its special field of usefulness to make its importance, in any system of education such as ours, at once apparent. And, first of all—and this undoubtedly would be its greatest work—would be the preparation and adoption of uniform equipments, uniform preliminary requirements, uniform curricula of study, and uniform intermediate and final examinations as to proficiency—this for all the schools, and as a basis upon which to begin the erection of a modernized system of education that would be commensurate with the needs of our profession. To these also would be added a general superintendence or oversight of the schools, with authority to veto unworthy faculty appointments, and the right of review of all graduation examinations, etc.

The diploma, when indorsed by the National Commission, to be accepted as a license to practice in any state or territory of the United States. This would at once invest our degree with a dignity and value not possessed by any other profession. It would also prepare the way for the acceptance of a universal degree, and would become a strong, stimulating force in building up a system of education for our students which should equal that of any of the

learned professions, and at the same time widen the scope of individual usefulness of all our members.

The training of the human mind, whether in primary or secondary education, has ever been deemed the highest duty and privilege of man, and the greatest intellects and first scholars of every age have not deemed it derogatory to their dignity to devote themselves to its consideration, and have ever held it to be the highest duty of the state and nation to provide liberally for the care and development of the people in their physical, moral, and intellectual life.

"Educate the people" was the first admonition of Penn to the colony he had founded. "Educate the people" was Washington's richest legacy to the nation. "Educate the people" was the unceasing exhortation of Jefferson, whose last years were concerned chiefly in establishing in Virginia a system of public instruction, the fruits of which are seen in her splendid institutions of today. So, too, with the arts and sciences. From the earliest days, liberal provision by the state and nation has been made for their establishment and maintenance at government expense. Astronomy, geology, and climatology, not to mention their kindred sciences, have received substantial encouragement and support from the public treasury. Not so, however, with the great science of medicine and surgery. From the days of Hippocrates to the present, medical science has fought its own way, developed its own progress, and established its own systems. And especially is this true of our own department in that great science. "Like the spider spinning its own web out of its own inwardness," it has developed and expanded, unaided and alone, till it stands today as one of the foremost professions of the world. The great problem of education, of whatever character, has ever been, and still is, to secure in due proportions instruction and the development of the mental faculties. It is this which constitutes the chief difficulty, both in the common education of childhood and the special education of later life.

The human mind can be trained only by facts imparted to it, and the first object of all teaching is to so impart facts as to educate the mind in scientific thought that it may be able to found a judgment on the facts presented. To accept as true all that established authority says is true, or to fill the mind with such statements by an effort of the memory, is false teaching, since by it the mind may become stored with error instead of truth. To determine that

which is true or false, and to arrive at just conclusions, is of far higher value than a mere memorizing of facts, and should be the primary and ultimate object of all teaching. "And to thus teach," says Dr. Watts, "the instructors should not only be learned in the sciences which they teach, but have skill in the method of teaching, and patience in their presentation."

No intelligent man doubts for a moment that one hour's teaching by an expert is far more valuable to a pupil than two hours' instruction by a mere routine teacher; or that truths are far more effectively taught by those who have been tempered for their work by the glow that comes from a growing insight into some chosen mental field, and who know what devotion to truth for its own sake means. It is men thus trained and disciplined who are desired as teachers in our profession. Not that many of those hitherto and at present connected with our institutions of learning are not men of experience, education, and devotion; they certainly are all of these, and deserve the highest commendation and respect for what has thus far been accomplished through their efforts and skill; but who of them all is not required to divide his time, energy, and thoughts between his daily practice and his hours of teaching?—between a necessity for bread and a desire to impart knowledge?

It has been truly said that no artist, however skilful, who paints his pictures for so much apiece, or who is required to paint that he may live, can produce his best results. His must be a labor of love; he must be above financial necessity; his mind and energies must be given without pollution to the study of the true science of his art, if he is to exercise and display his greatest genius. And what is true of the artist is equally true of teachers and institutions. Any system of education which does not keep men constantly at their best work is unbusiness-like and wasteful. Who can estimate the loss already sustained, in that Miller, Black, Williams, Andrews, Truman—not to mention scores of other equally conscientious though perhaps less-known workers—have been unable to give themselves wholly to study, investigation, and instruction?

That the agitation for higher dental education and improved facilities for acquiring it is to become widespread and permanent, I fully believe. That it will also receive opposition and discouragement is safe to predict, for there are always those who, while not openly opposed to a forward movement, nevertheless do not accord

to it the encouragement and support necessary for its accomplishment.

Among the many fallacies of the day that pass unquestioned there is none more fallacious than that change is popular. The truth is, he who seeks to alter the established order of things is likely to be, for a time at least, the most unpopular man in the community. He will be hated by those who are satisfied with the old evils; he will be disliked by the timid and lazy, who dread the perils and troubles of a change; and he will receive little encouragement from those most conscious of the evils, because his remedies will not act as a charm and remove in an instant the accumulated ills of centuries. We are not always conscious of the fact that in man the love of ease is far superior to the love of change. In the serious concerns of life, change is never desired for its own sake; habit becomes second nature, and it is only by the positive pressure of evil that we are driven to any reform. An old system must ever have two advantages over a new one—it is established and it is understood. We ought not, therefore, to be over-anxious to encourage a change in case of doubtful improvement; but in undertaking to bring about an improved condition in our educational system we are seeking that which will confer upon our profession and humanity benefits which cannot be properly estimated.

We are living in the present, but we must think in the future, and strive to build for those who are yet to come. The present becomes the past and the future the present in such rapid succession that the man who, in any of the serious concerns of life, does not think and live in the future, is certain sooner or later to find himself hopelessly in the past. And what greater incentive is there than this knowledge to awaken in us an irresistible desire and earnest purpose to lay broad and deep the foundation of that system which underlies all other systems—namely, the system which educates our students, and determines the character of the education which they receive?

Years undoubtedly will be needed for its complete accomplishment; but the gain of a little here and a little there, and the aggregate brought together into one complete, uniform, homogeneous whole, in which each and all are striving to encourage and assist in every honorable way, must eventually result in educational facilities for our profession which shall, in a larger measure, meet our peculiar needs.—*Dental Cosmos.*

THE CONDITION OF THE ALIMENTARY TRACT AND INTERSTITIAL GINGIVITIS. By F. L. Fossume, D.D.S., New York City. Physiology teaches us that the majority of diseases from which man suffers originate from, or are connected with, the non-physiological processes of digestion. Cell and tissue nutrition is dependent upon the elements absorbed by the chyliferous vessels which arise from the inner surface of the intestinal membrane. As these elements are finally poured into the blood circulation, and thus distributed throughout the body, the chemical composition of the lymph and blood necessarily must be affected by the character of the elements absorbed. Therefore, it is self-evident that we may expect the intricate processes of cell and tissue metabolism to be modified by changes in the chemical composition of the lymph and blood that supply them.

When any of the organs which contribute to the digestive economy are deranged, the elements taken in as proteids, carbohydrates and fats, at least in part, are not converted into chyle in an absorbable form or state, but remain in the intestines and are attacked by the microörganisms normally present. These organisms proliferate rapidly, because of, and to cope with, the large amount of undigested food, and in their activities produce the products of putrefaction, some of which are always absorbed by the chyliferous vessels of the intestines, and entering the circulation are finally excreted in the urine as indican. A test showing a considerable amount of indican in the urine signifies to a certainty the presence of the indoxyl sulphate group of intestinal intoxicants, such as indol, skatol, phenol and cresol. These are modified and their toxic effect greatly reduced by being carried to the liver, which is the aseptic protector of the body, and through this hepatic action indol appears in the urine as indican.

It has long been taught that the presence of indican in the urine denotes the breakdown of living proteids, as in the formation of abscesses, in cancerous growths which are ulcerating, etc. Those who have studied this subject carefully say that where tissues are breaking down and pus is forming, indican will result. Indican is present in eighty per cent. of abscess cases treated in dispensaries. But the examination of the urine after the pus has disappeared has shown indican still present. The conclusion, therefore, must be that the abscesses resulted from some abnormal condition which

produced indican, thus lowering the tissue vitality to a point when the abscesses developed. Cases of abundant pus, due to extensive infective wounds, did not show indican with any regularity, whereas in carbuncles or abscesses, which seemed to develop without any exciting cause more potent than the resident bacteria of the skin, indican was present in the above percentage of cases.

Pyorrhea alveolaris seems to come under the same class, and the indican is found in such cases almost uniformly. The deduction is that indican is the product of putrefaction in the alimentary canal, due, probably, to the bacillus coli communis acting on peptones. Whether it is deleterious to the system is not known. Either it is, or the process which produces it, is injurious. Blood pressure is raised during marked indicanuria. The first sign of renal failure is the raised blood pressure, due to retained excrementitious matter in the blood. Indicanuria seems to be one of the main causes of chronic interstitial nephritis, in which diseases the blood pressure for years is nearly doubled. Indican is indoxyl potassium sulphate. It is changed into this from indol in the liver, being there combined with the etheral sulphates. Should the liver be disordered, indican, as a rule, will appear in excess, and should the liver be over-active and much indol be brought to it, it will appear in the urine as excess of calcium oxalate, which by old writers was looked upon as presaging interstitial nephritis.

Some of the factors causing intestinal putrefaction are:

First. Improper mastication, resulting in gastritis, with lessened hydrochloric acid.

Second. Gastritis; lessened hydrochloric acid stimulates pancreatic secretions, and in such cases delayed digestion carries the peptones too far down the tract to be absorbed, and the coli communis changes it to indol, skatol, etc.

Third. Excess of sugar, due to catarrh following fermentation, and accompanied by much mucus, so that digestion is delayed by (a) impoverished juices, (b) mechanical obstruction caused by presence of too much mucus.

Fourth. Excess of proteids with normal digestion; or,

Fifth. Normal proteids, normal digestion, but absorption interfered with (mechanically) by too much fat in food.

Sixth. Normal proteids with slow digestion.

Seventh. Lack of bile, thus favoring putrefaction, as bile is strongly antiseptic.

Eighth. Weak muscular action of the intestines.

I believe the processes which produce the indican do the damage, as many samples of urine show modifications of the indican after regulation of the diet. Might it not be rational to believe, then, that in the intestinal tract lies the cause of pyorrhea alveolaris, and as indican is a sign of abnormal intestinal conditions, would it not be well to overcome the conditions producing the indican before we try to cure pyorrhea permanently?

The symptoms of intestinal intoxication are commonly summed up in the word "biliousness," with its lassitude, headache, irritability, nervous depression, muscular stiffness and soreness, cutaneous affections, heavily coated tongue, acid reaction of the fluids of the mouth, together with great viscidity, foul breath, sordes on the gums and teeth, and so forth.

Aside from poisons developed in the intestinal tract by the overactivity of the normal bacteria, abnormally numerous, it should be borne in mind that the intestinal tract is an excretory organ. If part of a dog's intestines is entirely emptied and amputated from the rest of the gut, the ends of which are then united, this short piece not being severed from its mesentery, and its ends closed, the part will be filled with excretions after three days. The peristaltic movement of some intestines is so weakened that no complete evacuation ever takes place, and in consequence the alimentary lining is coated with slimy mucus mechanically obstructing and clogging the delicate vessels and glands so abundant in this membrane. The mouth, which is the beginning of the digestive tract, may be termed the mirror of the alimentary canal, as it reflects almost immediately the existing conditions. It is well understood that the excretions of all living organisms are more or less poisonous to the organisms which produce them. Their retention in the circulation will be more or less dangerous to the welfare of the body, and they will eventually be deposited in those tissues that have the least power of resistance.

When the body is in this condition of lessened resistance, if it is not fortified by hygienic and medical interference, more serious conditions may develop, such as gout, rheumatism, nephritis, diabetes, nervous disturbances, etc. The alveolar tissues are usually affected long before these organic and constitutional maladies ap-

pear, and often pyorrhea alveolaris is well advanced, with loose teeth and absorbed alveolar processes.

The tissues especially liable to pathologic changes within their structures are those which are known as "end-organs," the chief of which are the kidneys, the eyes and the brain. The alveolar process is an "end-organ," but in its anatomical make-up it differs from the other softer tissues, and this difference is the important factor in the study of its pathological manifestations. In connection with this study, Dr. Talbot says: "End arteries running into the kidney, eye and brain, owing to their soft structure, give the arterial wall a chance of expansion, permitting, in a measure, the blood to flow more easily, and thereby warding off the tendency to disease. On the other hand, blood-vessels extending throughout the alveolar process in a tortuous manner cannot expand, as the result of which blood charged with toxins and subject to cardiac vascular changes immediately sets up irritation and inflammation, resulting in dilation, bone absorption and arterial degeneration. These changes, therefore, will occur much earlier in the alveolar process than in other end-organs."

A blood "smear" under the microscope, and the examination of the urine, are methods by which the condition of the general system may be ascertained. Dr. Talbot has made extensive examinations along this line and I quote his summing up: "Critical examinations of the tables must convince a careful observer that in every examination two conditions are present: First, autointoxication and faulty metabolism, as represented by the indican; second, kidney overstrain and renal insufficiency. When the liver fails to destroy the poisonous materials and the bowels to eliminate the toxins, overstrain of the kidneys causes the blood to be overcharged with toxins and acidity, and the heart and arteries undergo degenerative changes. Cardio-vascular diseases with insufficient blood supply result."—*Dental Brief.*

A NEW AND EASY METHOD OF MAKING PERFECT GOLD FILLINGS. By W. Thompson Madin, L.D.S., Birmingham, England. The following is a method demonstrated at the last annual meeting of the British Dental Association in London, and set forth by me in a paper in the *British Dental Journal* of November 15, 1905. As the advantages of it have been further confirmed by

experience, and as the growing tendency of the best operators is toward combination fillings, I am emboldened to describe it more fully. Dr. Head and others have often given evidence of the advantages of cement with metal fillings, and recently Dr. J. F. P. Hodson has described a method of procedure of his which is very much the same as mine.

For many years I have distrusted fillings the material of which did not stick to the walls of the cavity, and rarely have made an amalgam filling which was not pressed into wet cement. In the case of gold fillings, I think that observant men generally will agree with me when I say that only here and there is found a genius who can fill cavities with gold so that the gold is perfectly adapted to the walls of the cavity, and the filling watertight. I am constantly seeing fillings made by myself and others which by the telltale blue discoloration or the white opaque ring around them show that caries is still progressing, and that the filling is useless.

We know that this condition practically never occurs with inlays; but inlays, beautiful as they are, and undoubtedly useful as all who have had experience of them must agree that they are, have two weak points—they are held in only by the adherence of the cement, and they do not protect weak walls, because the material is not strong enough of itself to bring over beveled edges. Gold, still the king of all fillings, by this method can be keyed into the cavity by undercuts, while there is a lining of cement which perfectly obviates the old risk of non-adaptation, and tends to do away with the showing through of the gold in the case of thin enamel on labial surfaces; and the gold, being tough, may be brought over weak edges, protecting them as does no other material that I know. It very largely reduces the time necessary, too, as it does away entirely with starting-points and retaining-pits; although, of course, in using cohesive gold all through, as is done in this case, one never can hurry unduly. I use this method now in every case. It is as applicable to tiny cavities as to the largest contour fillings, and makes gold filling as easy and sure as using amalgam. In filling cervico-labial cavities —previously a difficult class of cavity to deal with on account of the trouble in obtaining dryness—all difficulty disappears, as the rubber dam and the cervical clamp are quite unnecessary; though in all other cavities the rubber being so easily applied is a great advantage. The cavity is thoroughly opened up, and in this I may say

we have learned a great deal from the inlay workers—their necessity for open flaring edges showing the ease with which patches of softened carious dentin might be left in hidden corners. It is then given a retentive form by undercuts or dovetails, and the simpler and shallower and less angular these are, the better. The cavity edges it is my habit to leave quite square by means of a disk, so that the filling may be brought over and the full thickness to the outside inclosed in gold for protection; the exact opposite to the sharpened-from-inside edge of an inlay cavity.

The rubber having been applied, either before preparation or after, as best suits the operator's taste, and the cavity dried, a piece of No. 30 gold foil is cut exactly as for taking an impression for an inlay; thin cement is now mixed (again as for fixing an inlay), and with it the inside of the cavity is smeared well over, and the No. 30 gold foil is pressed home into it with amadou, in the usual impression method. Special pressure is given in the direction of the undercuts, and often a ball burnisher is pressed in that direction also. This gives an undercut cavity, beautifully lined with gold, with cement in every possible irregularity. It is important to see that the edges of the cavity show up quite sharply, as only by that can one tell that when the filling is finished there will be no cement at the margins. This is easily done, however, with pressure on amadou, followed by a burnisher around the edges. Though I examined all my early fillings with a magnifying glass, I never found a trace of cement around a finished filling. It will often be found that the foil has been split, and a little cement is oozing through; this is not at all a disadvantage, as a piece of gold patted gently over the split stays in position at once. Into the gold-lined cavity, without waiting for the cement to set, I loosely place several pieces of sponge gold, beginning with the undercuts, and press them home, again with amadou; then condense thoroughly with hand pluggers, and finish the filling in the usual way. Any cohesive gold which the operator is in the habit of employing may be used; I personally use sponge gold, topping up with two or three layers of No. 30 as used for the impression, but that is a matter for purely individual taste. In the special case of the cervico-labial cavity mentioned above, the cavity is prepared, dried, and kept dry with napkin or wool roll, and the impression gold overlapping the gum effectually prevents any oozing. I recently have had an extensive case of so-

called erosion on the surfaces of the upper and lower teeth, and the latter, which previously I should have regarded as very difficult, were, with the help of a saliva ejector, filled as easily as they could have been had amalgam been the filling material.

This mode of working has altered entirely my methods of practice. Previously, subscribing to the old adage that "In proportion as a tooth needs filling, gold is the worst material for the purpose," I did not dare use gold in very weak teeth; now I know that the protection obtainable at the edges, and the adherence of the cement, make gold the ideal filling for teeth with frail walls.—*Dental Cosmos.*

GOLD INLAYS. By S. J. Knowles, D. D. S., Chicago, Ill. My intention is to describe a practical and accurate method of making gold inlays by taking impressions of a cavity and working entirely on cement and plaster models in the laboratory, not seeing my patient until the completed inlay is ready to be cemented into the cavity.

The subject of inlays for the past five years has received more than ordinary attention in the dental world, and dates back, I am told, to the time fifty years ago, when, with varying success, porcelain teeth or pieces of fused porcelain were ground to fit cavities, the adaptation and fit merely being approximate. Also to the time twenty years ago when such a well-known man as the late Dr. Swasey made many large successful gold inlay restorations. Our present Dr. Ames has also worked for the past eighteen years, as much as any one I know, to demonstrate the usefulness of cemented gold inlay restorations. I am in a position where quite frequently I see inlayed fillings made by my associate and preceptor, Dr. Wassall, that are and have been successfully protecting teeth for from five to sixteen years. For more than five years I have myself been making inlayed fillings that are protecting teeth satisfactorily in practically every case, even though many are not as well made as is possible now. I believe today, with the improved methods, appliances and technique, the question of practicability and permanency of the inlayed filling, if properly constructed and set, has been settled by most of us as a conservative and thoroughly practical method of

restoring lost and broken down tooth structure. It is in my own practice no longer experimental or questionable as to the best known method of securing permanency and preventing recurrent caries. The added certainty of retention is due to the possibility of giving to a cavity a perfectly mechanical locking form, it being practically an impossibility for an inlay to be dislodged by any vertical or lateral force, impact or strain. I shall refer to this locking cavity formation a little later on in my paper.

At this point I wish to quote a paragraph from the late Dr. W. C. Barrett's book on Oral Pathology and Practice, chapter on Fillings: "Were it possible to fill an ordinary tooth with something that would be perfectly congenial to the tissues there is little doubt that all filled teeth would be comfortable, and herein may be found a reason why certain materials, aside from their lasting qualities, make the best fillings."

This, I believe, emphasizes the value of cement as a filling material, admitting, of course, its one great disadvantage—the wearing and wasting away of its bulk.

There are several advantages that a gold inlay possesses over any of the mechanically retained gold or amalgam fillings, which I will enumerate as follows:

1. The absolute sealing of cavity against moisture, with cement.
2. The binding effect of cement to support frail teeth.
3. More perfect restoration of contour and contact points.
4. More perfect reproduction of occlusal surfaces with fissures and cusps.
5. Greater compatibility.
6. Less conductivity of thermal changes.
7. Time and discomfort saved to patient.
8. More general application, with permanency.

(1) The absolute sealing of the cavity with cement, used in connection with an inlay, gives an inlay for that reason greater immunity to recurrent caries. With a mechanically retained metal filling, the question is one of adaptation to cavity walls and not adhesion. Any expansion or contraction of a metal filling allows at once the admission of microorganisms within the cavity mar-

gins, and, of course, exposes the dentin to their destructive by-products.

When an inlayed filling is made to perfectly fit a cavity (which is possible) and is properly cemented to place, the cavity is so sealed that a leaky condition such as occurs about an ordinary metal filling, is impossible.

The permanency of a cement line about an inlay is dependent to a great extent on its minimum thickness, both for strength of adhesion and diminished tendency to wear away. Comparing this cement joint to the wood-joiner's joint of glue, the minimum amount gives the maximum strength, and it must be remembered, too, that cement is much stronger than glue.

The closer the inlay fits against the walls and margins of a cavity the less cement there is exposed and in consequence less to wear and wash away. Judging from the way cement wears cupped out, when used alone as a cement filling, allows certain comparisons. It has been my observation that cement wears out, from the margin of an inlay, only as deep as the margin is wide, and no deeper. This is, I consider, if correct, a very important fact in inlay work. So I repeat, if an inlay is made to come in close contact with cavity walls and margins, there is practically no cement to waste away, and if it does wear it is only to a depth as great as the margin is wide.

This explains to me one of the principal reasons why inlayed fillings are less subject to recurrent caries.

(2) The binding effect of cement to support frail teeth is certainly a great advantage, for the crowning of many good teeth may be deferred for years which would not stand the strain of a long continued malleted gold filling, with its wedging force continually at work. The old way with such teeth was to either make an uncertain fitting and more or less irritating banded crown, or an amalgam filling, which is equally uncertain.

(3) The more perfect restoration of contour and contact points may be accomplished because the entire polishing is done out of the mouth and the inlays are set in place with perfect contact.

This is a most important factor, for what is more annoying to a patient than a filling with poor contact? No doubt you all have had patients come to you who have been more conscious of teeth

with bad contact than they were of caries. Bad proximal contact is, as we all know, one of the predisposing causes of new caries about an apparently perfect filling.

Proper wedging of teeth is, of course, an important step in restoring contour, it being necessary at times, for best results, to wedge for two and three weeks.

(4) The more perfect reproduction of occlusal surfaces is possible because a carved and swaged occlusal surface may be given to an inlay, showing the proper fissures and cusps, thereby more nearly restoring it to normal condition.

(5) Greater compatibility occurs because undercuts are not made in sensitive and vital tooth structure, also because the tooth is not subjected to any shock from long continued malleting.

(6) Less conductivity of thermal changes is due to the intermediate cement lining, which, though only of the slightest film, tends to break up the conduction of thermal changes.

(7) The time and discomfort saved to the patient is very important, especially with many of our busy business men, for it seldom requires more than twenty minutes to prepare a single proximal occlusal cavity and take impressions of it.

The pain and discomfort a patient is saved from the preparing of deep retaining grooves and undercuts, the usual long and tedious malleting and subsequent polishing of proximal surfaces, with the much despised strips, disks and polishing files, etc., is surely a most decided advantage, as this is all done away with in inlay work.

(8) By the more general application with permanency, I mean that it is possible to make good fitting inlays in cavities that would practically be impossible to fill perfectly with gold plugged in, piece by piece, on account of the difficulty in keeping cavity dry and many other reasons.

I wish to refer, for the sake of illustration, to a practical case I had a few weeks ago for a patient of mine who came to me with a large, well-formed upper left third molar presenting a cavity on the mesial surface extending cervically under the gum for a considerable distance, also over the occlusal surface involving the mesial pit through to and including the lingual fissure. It was difficult for the patient to keep his jaws open for more than

two or three minutes successively, owing to severe cramps in the muscles of the jaws. I was able in this case, however, after properly wedging, to prepare, take impressions, and finally cement to place a good fitting gold inlay and get a result that I consider will be far more sanitary and satisfactory than would have been the case had I tried to make a gold crown with its irritating gold band, or an uncertain lasting amalgam filling that I am sure I could have never properly polished.

I shall only speak of cavity preparation in a general way, for this is a part of the work that permits of much individual expression. It is understood by all that a cavity must be so shaped that an impression or matrix may be removed without distortion; that is to say, it is slightly larger at the enamel margins than at bottom, or base, and any undercuts are avoided. The enamel margins are beveled to a certain degree and polished, affording them a protection when gold inlay is cemented to place. The mechanical looking form is a very important thing to observe in the preparation of cavities.

You will notice by some of the models that I have passed around how, in bicuspids, where the two pits and one proximal surface are involved, a slight enlargement of the distant pit affords a perfect, mechanical lock against dislodgment from any lateral or vertical stress. It will be noted that this same principle may be carried out in practically every instance.

The extensive cutting and opening up of a cavity in inlay preparation is another great step forward, for it insures the more positive removal of all carious tissue. This removal of caries in the preparation of cavities for metal fillings (not cemented) is much more difficult, as the tendency is to leave standing all the tooth structure possible, simply to insure having enough for anchorage and the ease of inserting the metal.

The instruments to be used for cavity preparation are many. In my own practice I use steel burs and excavators only to open into the cavity, doing the principal preparation with small round carborundum stones, which I mount myself and trim to different shapes by moving a ten-inch coarse flat file across these points while they are rapidly revolved in the handpiece of the engine. Occasionally I use smooth grits of corundum stones, same shapes

as the carborundum, as well as plug finishing burs and Arkansas stones.

At the conclusion of the cavity preparation comes the taking of impressions and bites to be used in the laboratory in the making of the inlay. The process is as follows:

1. A bite is taken in modeling compound.

2. A contour impression is taken in modeling compound, using a small tray.

The bite when poured in plaster of Paris is used as a guide to give the inlay the proper occlusion, and the plaster model obtained from the contour impression is used for the proper contour.

3. The impression of the cavity itself is obtained by using the Detroit Dental Manufacturing Company's "Perfection" compound.

The compound for impression is softened and molded into a small cone-shaped mass and hardened. A 36-gauge soldered copper band or a 28 to 32 gauge copper matrix is adjusted either around or between the teeth, as the case may require, and while held in position the point only of compound cone is softened by heating, when, using considerable pressure, it is pressed into cavity and held until thoroughly chilled with cold water. The impression when hard may be easily removed, providing, of course, there have been no undercuts in cavity.

The prepared cavity or cavities may now be temporarily filled with guttapercha and the patient dismissed until the inlay or inlays are ready to be set.

The bite, contour impression and cavity impression are now placed in a small pasteboard box, of which I have several for this purpose, and upon which is written the patient's name, date of appointment, and any memoranda which may be necessary for yourself or assistants while work is being done in laboratory.

The laboratory steps are as follows:

The bite and contour impression are each poured in plaster of Paris.

The cavity impression is invested or imbedded in a pad of soft plaster about two inches in diameter, so as to protect any frail extensions of the compound beyond the cavity margins, also to

make easier the subsequent handling of impression in making the cement top or model.

This round pad of plaster, when sufficiently hard, is trimmed square and the compound impression as well as plaster is trimmed so as to leave not more than 1-32 of an inch extending beyond the cavity margins. This trimming eliminates any undercuts that will be objectionable on the cement model. After the trimming of impression has been completed the plaster block, as well as the impression, is rubbed with pure talcum powder to assist in preventing the adhesion of cement.

In making the top or model of cavity, a sufficient quantity of Ames dark brown Crown and Bridge Hydraulic Cement is mixed to about the same consistency as is used in making an ordinary cement filling. The whole mass of soft cement is then rolled into a ball and rubbed with pure talcum powder to smooth the surface as well as to prevent adhesion, when the cement is forced down over the impression. The soft cement model, still remaining on the invested impression, should be submerged in water and left until the cement has crystallized, which usually requires about fifteen minutes. Being hydraulic, it is necessary to give moisture to the cement in order that we may obtain the maximum strength with the minimum expansion or contraction.

The cement model is easily separated from impression by submerging both in hot water for a few minutes to allow compound impression to soften.

Allowing the impression was correct, the resulting cement model will be, practically speaking, a perfect reproduction of the original cavity. This is proven by the fact that an inlay made to fit a model will fit a cavity equally well, if the details have been accurately carried out along true mechanical lines.

The model of cement is now invested with plaster of Paris in a small round steel tray or cup, a part of the Brewster inlay swaging outfit. The surplus plaster when hard enough is trimmed down to the edge of tray.

When possible it is well to have the invested cement model remain over night before swaging, to insure the proper hardening of cement and plaster. The cement model ought to be kept wet

by placing a pledget of wet cotton on it, in view of the fact that the cement is hydraulic.

If any of the margins on the cement model are not well defined they may be brought out by trimming the cement with a bur or an excavator.

With the model trimmed, the first step in obtaining a matrix after thoroughly annealing a piece of platinum foil one-one-thousandth of an inch thick, is to cut it the required size, place it over the cement model and partly adapt, by using a tightly rolled piece of cotton held in a pair of heavy foil carriers. The model and platinum matrix, with the cotton in position, are placed in the inlay swager and the platinum partly swaged in place, using considerable pressure.

The platinum is removed from model to be annealed again, after which the model and platinum matrix are placed in the swager, this time without any cotton, and the matrix swaged perfectly to place. After removing the model from swager, the matrix is thoroughly burnished at the margins to remove any folds. It is then annealed, patched, if necessary, and swaged.

In cavities that are at all irregular it is very difficult, in fact, at times impossible, to obtain a matrix without having any tears in the platinum. These holes in matrix are very easily covered and patched by using Pack's gold foil cylinders of different sizes. Gold foil remains in position much better than correspondingly small pieces of platinum foil.

The entire floor of matrix is stiffened and reinforced with 22-karat gold solder, which completes the making of matrix. The matrix is put aside temporarily, while a piece of softened modeling compound is pressed into the cement model and trimmed to the exact contour and occlusion desired, using as a guide the plaster bite and contour model. A Mellotte metal die and counter die is made, reproducing the carved occlusal surface of the modeling compound, and a gold tip swaged, using 36-gauge coin gold.

The gold tip of occlusal surface is trimmed to fit matrix, waxed in its proper position and invested, leaving a side open through which to solder. The under side of matrix is coated with Chinese white paint before investing to prevent gold from flowing through in soldering.

After removing the wax from investment by boiling, the inlay is soldered by fusing the solder in through the proximal side, and in simple occlusal cavities a hole is cut through the bottom of matrix and the solder melted through it.

The point is that an occlusal surface is difficult to correctly reproduce if a swaged gold tip is not used, while a proximal surface is comparatively easy to shape up by grinding.

The polishing of the inlay is done in a short time, using the models as a guide in trimming to margins, etc.

The cavity side of polished inlay is roughened and grooved by using thin vulco-carbon disks or small steel wheel burs. To cement the inlay to cavity great care must be exercised to have the cavity perfectly dry by using alcohol, chloroform and warmed air, preceded by carbolic acid to thoroughly disinfect dentin as well as to coagulate the albumin of cavity ends of tubuli.—*Dental Review.*

SOME OF THE DISEASES OF THE MOUTH, OTHER THAN THOSE ORDINARILY DEPENDENT UPON OR CONNECTED WITH THE TEETH. By Thomas L. Gilmer, M.D., D.D.S., Chicago, Ill. There are many diseases of the mouth —so many, indeed, that it would be impossible to more than call attention to them, did I attempt to include all in one paper. I desire, however, to call your attention to a considerable number of them, and in order to do this must present each very briefly and not attempt to go into great detail either as to pathology or treatment. Many dentists seem to entertain the idea that their sole professional function is to seek out, in examining the mouth, only such pathological conditions as are connected with the teeth, often ignoring much more serious diseases. The mouth is the legitimate field of the dentist, and he does not fulfill his entire duty to his patients unless he becomes familiar with all diseases of the mouth and looks for deviations from the normal whenever he examines his patients' mouths. There are certain neoplasms which if found in their incipiency may be removed and the patient relieved of a condition which, had it been allowed to progress, would have cost him his life. The dentist's opportunity for the good of his patient's welfare, so far as his mouth is concerned, is much better than that

of the general practitioner, since he sees the mouths of his patrons at frequent intervals and can often detect disease before the patient is aware that there is any deviation from the normal. He would not consult his physician until he was aware of a pathological condition, which might be too late.

The anticipation that the younger men of our *alma mater* may be stimulated to greater observations and study in this direction prompts the presentation of this subject.

Stomatitis.—A common name for a number of the diseases of the mouth is stomatitis. It is a word that has been overworked in the past, as it had but slight significance, meaning simply an inflammation of the mouth. As a prefix it may be employed with some degree of convenience, but it has slight value otherwise.

Canker Sores.—One of the most common diseases of the mouth which have no connection with the teeth are certain ulcers found on the gums and cheeks. These ulcers when first seen are depressions of considerable depth, usually appearing singly, but occasionally multiply. They appear most commonly at the duplicature or juncture of the mucosa of the cheek with the gums. They vary in size from one-eighth to one-quarter of an inch in diameter, usually somewhat circular in form, with well-defined congested margins and filled in with debris of a dark color. On removal of this covering there is exposed a raw surface which is very sensitive to the touch, but does not bleed easily. The common name for these ulcers is canker sores. By some pathologists they are supposed to be of herpetic origin, resulting in a limited necrosis of the mucosa. Others suppose them to be caused by some specific organism which was present in the mouth when a slight injury of the mucosa permitted their entrance into the tissues. Still others think them due to gastro-intestinal disturbances.

Acute Ulcerous Gingivitis.—Acute ulcerous gingivitis is a disease seen but rarely, and has not, so far as I am able to discover, been previously described other than by myself. The onset of the disease is sudden. The earliest symptoms are indicated by a slight malaise, which is quickly followed by rapid ulceration, at first confined to the gingivæ, usually about two or three of the anterior teeth on both jaws simultaneously, and in corresponding localities; later it is extended to the gums about a number of the teeth or groups of teeth, but rarely if ever does it include the en-

tire gum margin. The lingual margins and festoons of the gums do not participate at first in the inflammatory processes, but later the festoons are destroyed and deep pockets are formed in the interproximal spaces. Still later the lingual gingivæ participate, but in no case have I seen ulcerous manifestations in this locality. In twenty-four hours after the patient's attention has been called to the condition of his gums the parts attacked present the appearance of having been gnawed away until most of the gum tissue overlying the alveolar process immediately adjoining the teeth has been destroyed. The part of the gum attacked has soft, thickened, and in some instances everted margins. The eroded parts form pockets which are filled in with a grayish, pasty mass, similar to that found in syphilitic ulcers in the mouth. When this mass is removed a granulating surface is exposed, which bleeds easily and is very painful to the touch. The mucosa for a short distance from the ulcerative margins is of a dark red hue, as a result of the congestion. The gum covering the cervical and interproximal surfaces of the teeth is destroyed sufficiently in some cases to uncover the teeth down to the alveolar border.

The breath of the patient is fetid, the saliva ropy and in excess of the normal. The temperature in the early stages of the disease ranges at about 101 degrees. The patient is nervous and anxious, the appetite is poor, sleep is disturbed, the bowels are constipated. Bloody saliva escapes from the mouth during sleep, staining the pillow.

Without treatment the ulceration does not appear to extend beyond the gingival border of the gums nor deeper than the alveolar process, but when the case is neglected the entire mucosa of the mouth, in a degree, participates in the disease—that is, to the extent of becoming red and tender. The ulceration seems to be limited to the areas indicated, and after the destruction of the mature tissue has ceased the granulations only appear to be destroyed, leaving the pasty mass covering.

The submaxillary lymphatics become involved early in the disease. Microscopically no pus is observed, but the microscope shows pus cells in abundance.

It is not necessarily a disease of the poor or those of impaired vitality; it is not confined to those who are careless of oral hygiene;

neither is it traceable to metallic poisons, syphilis or renal disease.

Muciparous Cysts.—Muciparous cysts are found principally on the lips, but may be seen on the cheeks and on the floor of the mouth. These cysts appear suddenly as blebs, and when opened a clear mucus is discharged. They are formed by pent-up mucus from the mucous glands, the ducts of which have become occluded by injury or otherwise. These are innocent little affairs, but frequently cause some inconvenience to the patient; they also frequently cause him alarm.

Ranula.—Ranula is a tumor on the floor of the mouth, in form supposed to resemble the belly of a frog. It is sometimes as large or larger than a hickory nut, and has much the physical appearance of the muciparous cyst, except that it is much larger. Formerly ranula was supposed to be caused by stenosis of a salivary duct or by occlusion of the mouth of a duct, but more recent obserations indicate that it has no connection with the salivary glands or ducts, but results from closure of the duct from some one of the mucous glands in the floor of the mouth, or the gland of Bland and Nuhre, under the surface of the tongue.

Stenosis of the Salivary Ducts.—To differentiate between a stenosis of the salivary ducts and ranula, it is only necessary for the patient to observe on eating if either the sublingual or submaxillary salivary gland enlarges and becomes painful. If there is no enlargement of these glands under such circumstances, then we may conclude that the disease is located in the mucous glands before mentioned. I doubt if we ever have such entire stenosis of the salivary ducts as to cause complete stoppage of the flow of saliva, though we often see a partial closure of Wharton's duct sufficient to prevent its ready flow, with enlargement of the submaxillary gland. From my experience this condition does not result in the large tumors on the floor of the mouth, such as is formed from stoppage of the ducts from the mucous glands. Partial obstruction in the salivary ducts may be caused by an interstitial inflammation in the walls of the ducts, producing thickening and induration; or by deposition of calculus in the lumen of the duct and by injuries of the duct's outlet. The latter is often caused by biting the cheek at the point where the duct of Stenson opens, or by its irritation by sharp edges on a molar tooth. There is no surgical interference which benefits when the entire duct has become indu-

rated and lessened in caliber by an interstitial inflammation. In time, with palliative treatment, there is a subsidence of the inflammation, with dilatation of the canal, so that there is sufficient caliber in the duct to permit the accumulated saliva to flow out without disturbances.

Stones in the Ducts.—Very rarely do calcareous deposits in the ducts materially obstruct the discharge of the saliva unless they cause an inflammation. If the concretion has a smooth surface, I am of the opinion that it rarely causes trouble in this way. However, I have seen a few cases in which the stones were rough, giving rise to an inflammation of the duct which extended back to the gland, causing a purulent suppuration. On the removal of the stones in these cases I found them covered with spines, and to these rough surfaces was the inflammation due. All of the stones I have found have been in Wharton's duct. Generally they have been about midway between the gland and the opening of the duct. Frequently such stones are sufficiently large that they may be discovered by palpation, but a more certain diagnosis may be made by passing a small probe into the duct, when if calcareous matter be encountered, its presence is easily determined by the sensation received by the fingers through the probe. Radiographs may also be employed as an aid to diagnosis. As a precautionary measure, all stones of whatever nature should be removed.

Noma.—Noma is a comparatively rare disease, principally of childhood, sometimes called gangrenous stomatitis or cancrum oris. It is an affection of the skin or mucous membrane of the cheeks. A sloughing ulcer forms near the commissure of the lips, on the inside or outside of the cheek, involving, perhaps, the entire thickness of the cheek. Rapid necrosis is a result. Intense septic infection follows, with the usual train of symptoms. The disease is frequently fatal.

Syphilis.—Primary syphilis of the mouth is uncommon, though chancre is sometimes seen on the lips, and less frequently on the tip of the tongue. If on the lip, it may be caused by infected drinking cups, spoons, knives and forks, by kissing, and, I fear, sometimes by infected dental instruments. Chancre of the lip at first appears as a small, red papule; later it ulcerates and the parts about it become indurated. There is little or no pain. The ulcer following is covered with a grayish, pasty mass, which is discharged

from it. The submaxillary and sublingual glands become enlarged, but do not often suppurate. During the secondary stages of the disease mucous patches appear in the mouth, on the tongue, the soft palate, lips and inside the cheek. These ulcers have well-defined margins and are of considerable depth and contain the grayish, pasty mass before mentioned. The tertiary symptoms appear in the mouth as gummata and ulcerations. Necrosis of the palate and nasal bones as a result is common; the soft palate is sometimes wholly destroyed. All physicians having syphilitic patients should inform the patient's dentist, either personally or through the patient, should the patient's teeth need treatment, in order that the dentist may not infect himself and that he may be the more careful in the disinfection of his instruments after treating such patients, that others may not become infected. We owe it to our patrons that the greatest care be taken of our instruments to keep them sterile at all times, in order that we may not transmit disease. We should always beware of suspicious sores or ulcers about the mouth and lips. If a sore about the mouth having a resemblance to chancre or secondary indication of syphilis be observed, the patient should at once be referred to the family physician for positive diagnosis and treatment. Syphilitic sores on the lips or tongue can be mistaken only for lupus or epithelial cancer, and in some cases specific treatment or the microscopic, or both, can only be relied upon for positive diagnosis.

Leucoplakia.—Leucoplakia is occasionally found in the mouth. It is found on the sides of the tongue, on the buccal mucous membrane and on the buccal aspect of the gums. I have seen a number of cases of leucoplakia, and in almost every instance have found, as others, a history of syphilis, or have found the patient to have been an excessive smoker, or both. The sequel of leucoplakia is carcinoma; therefore it must be recognized as a dangerous condition; prompt and early treatment is demanded. The appearance of leucoplakia patches cannot be mistaken. The epithelium composing these patches is very white and shiny; other than this there is no evidence of disease. The patient is frequently unaware of his condition until his attention is called to it, as there is no pain, soreness or enlargement.

Lupus.—Lupus is a tubercular disease of the skin, and is sometimes found in the mouth, on the tongue and on the cheeks. It

may originate in the mouth and extend outward, or extend from the skin of the cheeks, outside, into the mouth. Lupus of the tongue forms deep ulcers with ragged edges, filled in with a grayish-white layer. These ulcers excavate underneath the margins of the ulcer for a considerable distance. The appearance of these ulcers is quite different from those caused by syphilis. Surrounding tubercular ulcers in the mouth there is little or no induration of adjoining tissue and the margins are not so well defined and sharp as in syphilis. The microscope differentiates it from carcinoma, and the absence of submaxillary buboes contraindicates syphilis. This form of tuberculosis is generally amenable to X-ray treatment, as is leucoplakia.

Actinomycosis—Actinomycosis is much more commonly found found in the mouth than elsewhere. Out of 383 cases reported as appearing in man, 215 of these were found in the mouth (McArthur). Secondarily the disease appears on the neck and on the side of the face. This disease, when it attacks horses or cattle, is known as lumpy jaw. The fungus causing the disease comes from the grains, chaff and straw of wheat, barley, oats and other cereals. It first appears as a nodular body or growth; this breaks down and an ulcer forms. From these there may be expressed, in most cases, sulphur-like granules, which under the microscope show the characteristic ray fungus. On the side of the neck, in the secondary infection, the skin is thrown into folds, and from minute sinuses there may be expressed these characteristic granules. The fungus finds access to the tissue through decayed teeth, pyorrhea pockets and the follicles of the tonsils. It destroys the alveolar process, but rarely the bone proper.

Gonorrhea.—Gonorrhea is occasionally seen in the mouth The mucosa of the mouth presents the appearance of multiple small blisters, with desquamation of the epithelial covering and with a milky-appearing exudate. The mucosa is extremely tender to the touch, the patient eats with difficulty, the breath is offensive, the temperature is above normal and the patient has much physical discomfort. The sublingual and submaxillary lymphatics are early involved. The appearance of the mucosa is similar to that seen when there is a catarrhal inflammation of this tissue, but the gonococci differentiate it from this disease.

Tumors of the Mouth.—Tumors of the mouth may be be-

nign, but clinical observation indicates that 86 per cent of all new growths in the mouth are malignant or may become so. It is quite impossible to mention more than a very few of these, and these extremely briefly. Fibroma, sometimes known as epulis, is a fibroid tumor arising from the periosteum. It is found springing up between the teeth, forcing them apart, usually about the anterior teeth. It is pedunculated and sometimes grows to great size. It is thought by some that from irritation it may become malignant. It sometimes breaks down and ulcerates. If it is thoroughly removed early in its growth, together with all of the periosteum connected with it, and a part of the alveolar process, it does not return, but if it is only snipped off or cauterized off it will certainly return. To temporize with it is dangerous.

Carcinoma.—Carcinoma and sarcoma are the two malignant growths of the mouth. Carcinoma occasionally attacks the tongue, but more frequently the lips and buccal mucosa. It may be caused by irritants, such as rough edges on the teeth, by a pipestem or other irritant constantly applied. It is three times more common with men than with women. Its early recognition and removal is important, since it is inclined to invade adjacent tissues. It begins with a hard nodule, which soon ulcerates, when it is very painful and gives out an offensive odor. The lymphatics are early involved. As said before, it is differential from lupus or syphilis by the microscope. Even when thoroughly removed, 75 per cent recur, though the necessary precaution of removal of the lymphatics which drain the territory has been observed. Its origin may be in the lining of the maxillary sinus. In these cases it may invade the mouth through absorption of the buccal wall of the antrum and appear as a cauliflower protuberance; at the same time it may invade the nasal fossa in a similar appearing growth. In such cases excision of at least one-half of the maxilla, with a thorough removal of all the lymphatics which perform police vigilance over the region, is the only hope for the patient. Carcinoma is generally a disease of the adult, not often appearing in those under forty years of age. The prognosis is more favorable in those cases where it attacks the lip, and then only when complete excision is done early.

Sarcoma.—Sarcoma is a growth springing from the connective tissue group. It is found in the mouth on the tongue, in the maxillary bones and the cheek. It is a disease more commonly

found in the young, but attacks at all ages. There are several varieties. The three general kinds are the giant cell, the spindle cell and the round cell, and the malignancy is in the same order. The giant cell is more commonly found in the lower jaw. If it is discovered in time and thoroughly removed the prognosis is favorable, since in this variety there is less tendency to secondary growths. The spindle-cell sarcoma is much more likely to invade remote parts through the lymphatics and the large veins. The round-cell sarcoma is the most malignant of the three varieties, and there is a greater tendency toward the production of secondary foci. Sarcoma is more frequently seen in the mandible than in the maxilla. On the upper jaw it may originate in the periosteum of the antrum of Highmore and enlarge the side of the face enormously, and finally, by absorption, find entrance to the mouth through the buccal wall of the sinus. It also projects itself into the nose, and occasionally elevates the orbital plate, causing protrusion of the eyeball. In some instances the alveolar process is depressed. Sarcoma may arise from tooth germs, from the periosteum under the gums, and from the medullary substance of the bone. Sarcoma of the jaws and carcinoma are not always clinically easily differentiated, and the microscope may be needed to solve the problem. Sarcoma originating in bone causes it to enlarge, but unless by pressure of the growth on the principal nerves, such as the inferior dental, it does not early in its progress cause pain, as does carcinoma. Sarcomatous growths do not involve the lymphatics until ulceration takes place, giving rise to a mixed infection; and when they do ulcerate there is a tendency to hemorrhage, since the blood vessels are more numerous and larger in sarcoma than in carcinoma. One case of giant-cell sarcoma occurring in my practice originated in the mandible of a young girl about sixteen years of age. Instead of resection of the jaw, which is the usual custom, we removed the diseased part only, operating from within the mouth. We found all the anterior portion of the jaw except the alveolar process absorbed, it being replaced by cartilaginous tissue, which was easily removed by a gouge. We left the alveolar process and the teeth intact, which preserved the contour of the face to a considerable extent. Over two years have elapsed since the operation, and no signs of recurrence have been observed. It seems that we were justifiable in this case in preserving a part of the jaw intact rather

than excising a large part of it, mutilating for life the face of the young girl, besides depriving her of proper masticatory apparatus.

Dentigerous Cysts, Odontoma and Epithelial Cysts.—Dentigerous cysts, odontoma and epithelial cysts should never be mistaken for sarcoma, but sometimes they are, and excision of the jaw made. With the benefit to be derived from skiagraphs and the history in such cases, no such inexcusable mistakes should occur. These tumors are of slower growth than sarcoma or carcinoma, a fact which should be remembered and one which should aid in arriving at a differential diagnosis. These growths are found in both jaws, having their origin either in unerupted teeth, the dental follicle, or from the remains of parts of the dental epithelial cord which have not been completely atrophied; or, as in the case of the epithelial cysts, from inclusion of the epithelial cells by the tissues underneath. Such tumors are of slow growth, are not painful and do not usually suppurate.

Necrosis.—Necrosis of the maxillary bones generally occurs as a result of infectious material from the teeth. Of this we do not touch upon, but it also has its origin from fumes of phosphorus, from traumatism, from exanthemata, from mercurilization and from syphilis. It is easily diagnosed, especially when a sequestrum is formed. The symptoms are: reddened, swollen gums, pus from sinuses about the teeth, fetor of the breath and induration of the overlying soft tissues; later, sinuses may be found on the face. Surgical interference is permissible only so far as it is necessary to establish and maintain perfect drainage and the removal of sequestra when formed. Nature should be permitted to mark the line of demarkation when the sequestrum should be removed. The parts, in addition to thorough drainage, should be kept as nearly aseptic as possible. If these precautions be observed, new bone will take the place of that lost if the part attacked be the lower jaw, and but slight deformity will result. Necrosis of the upper jaw is rarely seen except as a result of trauma or syphilis, and the bone here destroyed is rarely reproduced.—*Dental Era.*

PLASTER IMPRESSIONS, By Cecil G. Riddett, Leeds, England. In introducing the subject of Plaster Impression Taking, I do not claim any originality for what I am about to bring before

you, but perhaps a few of the ideas may be new to some amongst you, and I hope will give rise to a keen discussion. I will begin by mentioning a few items of the apparatus which are necessary to have at hand:—

Rubber Apron.

Saliva tube, especially in taking lower impressions.

Tray for collecting the fragments (which the patient may hold under the chin), and a pair of tweezers.

Superfine plaster, which may be conveniently kept in old rubber dam tins, which are airtight and allow of the plaster being shaken into the water in a fine shower.

Two or three small rubber bowls, and bone spatulas.

Salt, alum or nitre, for hastening the setting.

Cochineal in a drop bottle, and where teeth are present it is useful to get the patient to rinse the mouth with *milk of magnesia,* as the plaster leaves the teeth more readily when this is done.

Having everything ready to hand, the next thing is the *selection of a suitable tray.* If *edentulous* (1) a *ready-made tray* might be selected, placing as a precaution a strip of softened wax at the heel of the tray to prevent the plaster flooding the soft plate and producing nausea. Also it is advisable to place "dabs" of plaster in the palate and each sulcus before introducing the tray to the mouth, or the impression will often be deficient in those places.

One disadvantage of this method is the difficulty of getting the impression off the model later on without injuring the model, since the impression is very thick in places.

(2) The second method is to first take an impression in composition, withdraw, and whilst still warm cut away the composition pretty freely, roughen the surface, and then take a plaster impression in the tray so prepared. Such an impression is easy to separate from the model, but if long teeth are standing it is difficult to get the impression of the alveolar border deep enough.

(3) The third method is to make a *special tray,* either by (*a*) waxing up the model and striking it up in metal, brass or German silver, and just before taking the impression dab the heated tray with a small stick of composition here and there to prevent the tray from leaving the plaster in the mouth; or (*b*) by casting a tray in tin or some soft metal in a sand flask or a matrix composed of sand and plaster in the proportion of 1 to 2, after the latter has been well

dried and the metal well heated. The latter method leaves a much smoother surface on the tray, and saves a lot of finishing.

I will now pass round a card to which I have fixed specimens of the different trays mentioned. There is, however, another tray of which I am very fond, and that is a tray made from sheet *hard-bake,* made by mixing composition and shellac together, in equal parts by weight, and then rolling it out. To make such a tray, damp a duster, fold into four, and then adapt it to a rough model previously taken. Now take a piece of hardbake, heat and press it over the duster and mould into shape, take off and cool with water. A handle is now made by bending up a piece of thick tinned-iron wire, heating the ends and pressing into the tray whilst on the duster. Now mark the extent you wish the finished tray to be with a piece of chalk and then cut it down with a fret saw, finally smoothing the edges with a file and rounding in a small flame. Finally, heat the back-edge and just turn it up to prevent the escape of the plaster down the throat. Such a tray can be very quickly made, and after casting the model, by warming it readily leaves the impression as a thin film, which is easily separated from the model, mimimizing the risks of breaking any isolated teeth.

I will pass round a card showing the various stages of the manufacture of such a tray.

In removing such an impression from the mouth do not rely entirely on the handle in detaching the impression, but help it out by levering with a finger under one of the edges.

Having selected your tray, mix your plaster to a consistency that will permit of manipulating it without its running out of the tray as soon as it is put in; fill the tray, but do not overfill it, and then adjust the heel of the tray to the back of the mouth and press the tray forward, thus squeezing all the surplus to the front and allowing the operation to be concluded in a dignified manner, instead of having one's work spoilt by a dash for the spittoon.

I always tell the patient that there will be some breakage, that it is unavoidable, and then get them to hold the tray for the fragments whilst I place them in position in it with tweezers. It is important here to be perfectly composed and to show no signs of nervousness, or you may alarm your patient and lose some important fragments of your impression. If the bits of plaster are covered with mucus, rinse under the tap and place them on bibulous paper to dry. In

placing the impression together, put the large pieces in place first and you will then see better where your smaller fragments go. Any deficiencies can be made up with red paraffin wax, trimmed up with a cold instrument when hard. I consider this better than leaving them and trimming the model afterwards, as there is less chance of breaking the model when getting the impression off. One of the great advantages of plaster, however, is that any deficiency on the impression on the model can be corrected with great accuracy as the edges are so well marked, and the surrounding parts not dragged at all.

Any weak teeth, and especially those at either end of a space, can be supported by fitting tinned iron wire, about the thickness of tube-wire, into their places in the impression, bending the wire so as to allow it to pass a little way in the substance of the model parallel with the alveolus and then abruptly out to the margin of the impression, where it is held by strong wax. This gives the plaster tooth a solid support, and does not protrude beyond the cutting edge of the tooth.

I like as a separating medium a solution of silex, or water-glass, half silex and half water, taking care to rinse quickly under the tap before running the model, as if silex is left in the deeper parts of the impression a rough model will be the result.

In getting off the impression I immerse for a short time in hot water, and then carefully remove the pieces, sacrificing the impression rather than trying to preserve it by levering off large bits at a time, and probably breaking my model. Any broken bit of the model may be painted with *thick* silex, and on drying the model this will generally hold pretty firmly.

I will now pass round a model, taken in a special tray with composition, which shows three very bad "drags," though taken as carefully as possible. Now it is impossible to trim this model accurately, as the alveolar border was as much dragged as the tooth itself. Now many men contend that if you do get a model from a plaster impression showing all the undercuts, you cannot fit a denture made from such a model into the mouth without cutting away a lot of vulcanite.

But I maintain that when you have trimmed away just enough vulcanite to let the case into place, you have a denture which is resting upon far more of the alveolar border than one made from a

dragged composition impression. Moreover, if carefully fitted, so as to be a really tight fit at first, such a denture will hold very firmly without the use of bands, which is, of course, a great advantage.

I will now show three methods by which this model could be taken in plaster, so as to give the undercuts accurately.

First make a hardbake tray with a smooth interior bridging over the spaces between the teeth where the undercuts are. Now fit a thin partition of metal to the interior of the tray, jutting down into the undercut space. On taking out the impression, the tray will leave the impression *in situ,* and one can break out the plaster easily, as the metal partition will divide the space in half; then replace the fragments into the tray and cast.

The second method is to make comparative cores for the undercut spaces, introducing the core from the buccal aspect of the space before taking the impression in plaster with a special tray. On withdrawal of the tray the core will remain *in situ,* and can then be removed and replaced in the impression. Instead of composition, plaster could be used for the core.

I will pass round trays and models illustrating these two methods.

The third method is more complicated, but will give you a satisfactory result where great difficulties present themselves.

Take a case where the front six teeth are standing, then a space on each side, and then the back molar or molars also standing, the spaces being very much undercut. I would make a composition core (inserted from buccal aspect of each space) and only occupying *half* the undercut. Taking one side at a time, I would place this in position—having previously vaselined it, and with a little hardbake tray take a small impression of the *inside,* giving half the space and the lingual aspect of the teeth. Then remove the composition core, vaseline the plaster surface previously in contact with it, and with a small tray take the outside in plaster. When hard, detach the two impressions, one in an inside direction, and the other in an outside direction, place them together and cast the model. Do the same for the other side, and you now have the models of each side giving correct reproductions of the undercut in the mouth. Now take an impression of the front from six teeth only. Into this fit the two side models just taken, the end teeth of each fitting into their respective places in the small impression.

Now cast plaster in and around, and you have a correct impression made up of three separate parts united in one.

I will pass round a card showing better, perhaps, the stages than the description has done. I will also pass round a card showing three models of same mouth—one from (*a*) composition impression, another from (*b*) plaster impression, and the last from (*c*) plaster and terraplastica impression. This latter material gives a nice silky surface to the impression.

I will say in conclusion, gentlemen, that there are two cases where I would not use plaster, viz.: (1) An old patient with very loose teeth, likely to become detached in the impression if plaster is used; and (2) in a mouth with very spongy tissues, which would be better taken in composition in a special tray.

Hoping I have not been too tedious, and thanking you for the patient hearing you have given me, I will resume my seat, trusting that a good deal of controversy will arise out of the subject I have brought before you.—*British Dental Journal.*

THE SEAMLESS GOLD CROWNS. By Frederick H. Berry, D.D.S., Milwaukee, Wis. Each time we read an article in a dental journal we almost always ask ourselves this question: Who is the author and does he really know what he is writing about? Let me answer this question for you this time, for I feel that if there is any one branch of dentistry more than another on which I feel strong, it is the subject of seamless crowns. The reason for this is due to my unusual experience.

When this style of crown came into the profession I was among the first to perfect, manufacture and sell suitable tools for making them. Eight years manufacturing the Berry Seamless Crown tools, giving clinics and making sample crowns, besides using the system exclusively in my own dental practice. This is not all. I have made hundreds of copper crowns as samples and exhibits of what the tools were capable of doing. While doing this at dental conventions and in dental offices I have received many good suggestions from other dentists, all of which have helped to put me in position to say that I believe I know what I am writing about.

I am no longer manufacturing crown tools. I feel that it is

my duty to give to my profession the result of my experience, and also my formula for fusible metal, which has always been kept a trade secret.

I know full well the views of the public as regards the esthetic features of gold crowns. I am pleased to say that they are not advocated by the dentist and not sought by the public so much as in years past. However, all will agree with me that there are times and places where nothing but a gold crown of some kind will suffice.

It is my conviction that when such cases do present themselves there is no other gold crown that will fill the requirements nearly so well as a perfectly made seamless crown.

In my many rounds among dentists I have received much criticism on this style of crown. I can, however, almost always trace the objection to the dentist's inability or lack of knowledge and experience in this style of crown making.

The purpose then of this article is not to give in detail the entire technic of seamless crown making, but to correct arguments against it, and to give some new technic which has not appeared in print.

In this age of dentistry we are all looking for methods which relieve the patient and operator of the long, tedious, nervous strain at the chair. The seamless, above all other methods does this, as also all branches of the profession are tending toward accuracy and higher ideality. The seamless above all other systems of gold crown work is the essence of perfection.

Let us dwell a few moments on this point. Allowing that the tooth root has been carefully and perfectly prepared (this holds good in all methods) we will proceed to compare.

With a soft copper seamless band carefully fit the root following the festoon of the gum. Take a small wax bite and impression with the band in place, and you have every measurement portrayed that anyone could ask for or wish to get. There is not one point overlooked. If this wax bite and band are now properly filled with plaster and transferred to an articulator giving a side motion or bite, you have all that it is possible to get by any method. We now have accurate measure of every detail. The band reproduces the size and shape of the root as well as

the line of the festoon of the gum. The bite indicates the occlusion and the articulator gives us the side motion of mastication. The adjoining teeth indicate the contour. Is there anything more that we need? I cannot conceive of anything else. Someone will say that this is all well and good, but that they cannot reproduce all of these accurately in the finished crown.

I say emphatically that we can if we will heed these few important points.

In the first place we must use suitable fusible alloy. To some the words fusible alloy does not mean anything more than a metal which melts at a low degree of heat. There is, however, as much working difference between the various fusible alloys on the market as there is between the various working properties of waxes and impression compounds. The original metal, which we know as Melotte's metal, is no more accurate for seamless crown work than paraffin is for impression work. Why? Because it is too soft and will not reproduce the sharp lines and carvings of the sample crown. It is of such a nature that we cannot break it apart without stretching it out of size. It compares with a suitable metal as wax does with plaster for impression work. In the early part of my experiments and manufacture of this article I compounded many alloys of various proportions until I arrived at an alloy just suited for the conditions. Strange to say, this alloy is not good for any other branch of our work or kind of crown making. It is too brittle to be used as Melotte's metal for die and counter die. It is too high fusing to be used in connection with green or moist plaster. It will alloy with gold if cast upon it, as is sometimes a lower melting metal.

It is composed of—

Bismuth, 16 parts
Tin, 16 parts
Lead, 10 parts
Antimony, 4 parts

You cannot, however, place all of these metals in a ladle and melt them together and get the same results as you will if done the following way. Antimony is a metal which, when heated in contact with the air readily turns to antimonic oxide and for this reason if it is melted in an open ladle with the three other metals

we will fail to get the given proportion of antimony into the alloy. We should proceed this way: In a suitable iron ladle (if making small quantity) melt the bismuth, lead and tin. In another ladle or crucible place the antimony and cover it from the air with a mixture of equal parts of powdered charcoal, sodium carbonate (washing soda) and sodium chloride (common salt), bring the metal to a dull red heat and as it melts bright and clean, pour it into the molten mixture of bismuth, tin and lead. Throw upon the surface of this alloy a small piece of resin and with a pine stick of wood stir the metals well together. All impurity will float on top and must be taken out of the ladle. It can now be cast into any suitable form for future use.

This metal must not be mixed with fusible alloys of any other brand. It is of little use for any other kind of prosthetic work requiring fusible alloy. In using it do not overheat it, and if it becomes unworkable through use, it can be improved by giving it the resin and pine stick treatment while melted at a little higher temperature than you would otherwise heat it. This is a metal which will reproduce with accuracy every line and measurement of the carved model crown.

Technic of making the casting: The melting point of this alloy is so high that the model tooth form must be made of plaster. Here some have trouble. Unless the plaster form is thoroughly dried, the moisture will cause the metal to bubble and produce an imperfect casting. To avoid this, place the tooth form on an old instrument like an excavator and sink the plaster form into the ladle of molten metal until it ceases to bubble. It is then safe to proceed. We will now select one of the drawing punches which is a little larger in diameter than the tooth form, and with a little moldine fasten the tooth form to the end of the punch, as if the punch were a handle. The casting ring being ready, with dividing papers in place, take the ladle of melted metal in the left hand and the punch and tooth form in the right hand. Fill the casting ring and immediately sink the tooth and punch into the center of the metal. Just at the moment of the setting of the metal give a little added pressure to the punch. This will cause a sharp impression of the model as the metal congeals.

The next difficulty is swaging the gold crown in this metal mold. I used to be more careful in this procedure than I now

am. Since learning the use of moss fiber gold for inlay making I save time by patch work. I drive the gold blank form into the mold with a stick of wood without trying to perfect it. I then remove the crown from the mold and cut off part of the surplus gold so as to bring the upper edge of unfinished crown lower down in the mold than the impression of the end of the punch. Next, with a larger piece of wood, swell the neck of the crown out to fill the mold. Fill the crown and impression of punch full to the top with gum camphor and with a heavy hammer drive the punch down as far as it will go to the bottom of its impression. Put in more camphor and drive again. Upon opening the mold after this severe treatment you will invariably find that the crown shows all the fineness of the metal mold, but that in crowns with sharp points or cusps they have torn or bursted through. Do not worry because of this. Hold the crown over the gas flame. The camphor will melt and drop out. Heat the crown to redness to cleanse it of the carbon left from the burning camphor. Cool and replace the crown in the mold, fill the cusp or broken place with a small piece of moss fiber gold. It will follow the shape of the mold. A few pieces of solder inside of the crown will give a solid cusp of high carat gold, due to the mixture of moss fiber.

If the crown is for bridgework use high grade solder, so that the soldering of the bridge will not affect the first soldering. With care, repeated annealing and more time it is not necessary to burst the cusps, but the other way is a saving of time. We need to fill the cusps a little for durability. I deem it good practice to make a crown this way.

At this time I will add another method of use for seamless crowns. Quite often we have a case requiring an artificial partial denture, one or more bicuspids or molars could be crowned and become a benefit in retaining the plate. Make the crown in every way the same as before. After the last swaging and before the surplus gold is cut away take a large size bur in the engine and engrave a half round groove in the lingual side of the mold, replace the crown, and swage once more. We now have a half round projection on the lingual side of the crown. A few pieces of solder on the inside of the crown fills it and

makes it durable. Put the crown in place in the mouth without cement and take the impression for the plate. The crown will come away and will finally be in its place on the cast. Construct the plate as usual, but when packing the rubber, burnish tinfoil over the gold crown to keep the rubber from adhering to the crown when vulcanizing. We now have a counterpart of the raised portion of the crown vulcanized in the plate. It can be readily seen that after the crown is cemented in place the plate will spring in over this rib or bulge; but after the plate is in place the crown is not kept under pressure from the plate, and so the root is not moved as are teeth by what we term a spring plate. This principle can sometimes be used where a crown adjoins a place to be filled with a plate. In such cases place the bulge on the side of the crown next to the space to be filled.

This feature is sometimes useful where we wish to clasp a plate about a gold crown. The bulge on the crown can be so placed and of such a size and shape as to hold the clasp on the crown and not cause side pressure on the root.

After practicing all methods of crown making as each has been introduced I feel justified in saying that a rightly constructed seamless crown will meet the requirements of a larger number of abnormal conditions than any other style of gold crown. It is in these abnormal cases that the dentist's ability is often severely taxed.—*Dentist's Magazine.*

A NEW METHOD OF CONSTRUCTING THE FRAMEWORK ON WHICH A REMOVABLE CROWN CAN BE BAKED. By W. L. Fickes, D.D.S., Pittsburg. The crown about to be described possesses points of merit, which are common to other crowns, as well as a new feature, viz.: a cap and tube on which can be baked a porcelain tooth. If necessary a new crown can be baked on the detachable cap and tube, without disturbing the cap and post on the root.

The root is prepared, banded and capped, as for a porcelain-faced gold cap, collar and post-crown, with the post projecting about 3 mm. A piece of platinum plate, 34g., is adjusted to place and adapted to the cap on the root.

A tube made of 34g. platinum is fitted to the post and outer cap.

This tube and the outer cap are soldered together with platinum solder, readjusted, and the outer cap reburnished to the cap on the root. The outer cap is trimmed to correspond to the margin of the cap on the root. The outer tube will not be too large for most cases if the post is 13 or 14g., and it can be made smaller for special cases.

An iridio-platinum tube could be used instead of a solid post, and

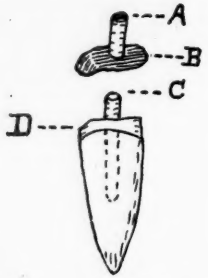

Fig. 1

Fig. 2

the tooth treated through this tube. The opening through this post tube will give ample room for treatment if it is large enough to admit a 22g. wire, and the tube-post will be strong enough for practical use, if the outside measurement is 13, 14 or 15g., and if it is made of iridio-platinum.

A bite and impression should then be taken and the outer cap

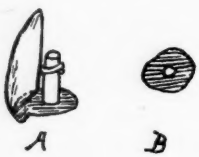

Fig. 3

Fig. 4

and tube removed with the impression. After mounting on the occluding frame, the porcelain crown can be built up and then baked on the outer cap and tube.

In applying the body keep it away from the margin of the cap,

to permit of reburnishing just previous to the last bake. Set with guttapercha cement for ready removal for treatment or rebaking.

The advantages of this form of crown are: first, the root is properly capped and the cap and post cemented to place, independently of the crown, and the latter can be removed and replaced without disturbing the cap and post on the root; second, the band can be burnished to the root, after cementation, more exactly than with the Richmond crown; third, a new crown can be baked on the cap and tube without reconstructing the framework; fourth, if an inner tube is used the tooth can be treated without removing the cap and post from the root. The manufacturers could furnish uniform-sized root posts and tubes with cap attached, thus relieving the dentist from that part of the work. The ease of repair and simplicity of construction are special features.—*Dental Summary.*

PROSTHETICS. By W. D. James, D.D.S., Tracy, Minn. In this short paper I will try to set forth some of the fundamental principles governing prosthetics so far as my special department goes. Prosthetics properly speaking covers a very broad field, viz.: The replacing of any lost member of the human body by artificial substitutes.

Prosthetic dentistry therefore means the replacing of lost dental organs, or parts thereof. As the field is so broad I will only try to bring to our minds one special feature, viz.: Anatomical occlusion and the modus operandi of obtaining the same. In the beginning let us remember that in replacing lost organs of mastication there are fundamental principles which we should never lose sight of, viz.: Serviceability and harmonious effects.

Before taking up the several steps in constructing a full upper and lower set of teeth, I wish to say to you, gentlemen, that this short paper is not to be considered in the light of a scientific discussion, for it is my purpose to deal with just plain ordinary facts and conditions as we find them in an ordinary every day practice.

The first step therefore to be considered is the taking of the impressions.

To properly construct artificial dentures that will comply with all the requirements, demands an accurate impression of the tissues upon which the plates are to rest. This, I believe, can only

be obtained by using plaster. In ordinary cases where the tisues are of a uniform hardness I use plaster of a thick creamy consistency with quite a degree of pressure on the central portion of the cup, always using a cup that fits the mouth closely, so as not to allow the soft parts to fold under the edges of the cup. In difficult cases, such as very hard flat mouths, I find this method very useful, viz.: Take impression first with modeling compound, and then cut away all excess above the rim of cup, slightly compressing the compound in the deeper portions of the impression, then filling this with medium soft plaster; take another impression using quite considerable pressure. This is a trifle more work than the old way, but it always pays, for you are always sure of a good result. The next and second step is filling the impressions. This may seem a very simple matter to some of you, but I assure you it is not, if one is to get the best results. What is more aggravating than to find that you have destroyed a good impression and have secured a model which is porous. To avoid this, soap your impression with liquid soap and when dry fill the impression about one-half full of soft plaster, and then grasp the handle of your tray firmly and throw out all the plaster you can in three or four short downward jerks, then fill with the same mix of plaster and you will have a smooth, perfect model. The third step is making your trial plates and taking the bite. As you all use different materials for making base plates, I will only say be sure that your plates are sufficiently reinforced so that they will not spring in taking a bite. In taking the bite, I use Johnson & Lund's yellow beeswax which is about ¼ inch thick. Take a strip about ¼ inch wide, place upon your models, put in the mouth and ask the patient to close; when you find you have the correct relations of the jaws, mark the median line, also the tooth line. Remove from the mouth and place upon the models, then mark the median line upon both upper and lower models. Then with the dividers mark the length of the bite; this will prevent any possibility of shortening or lengthening the bite in the arrangement of the teeth. The fourth step is mounting the models on the articulator. To do this correctly, the lower model should be mounted first, arranging it so that the median line is about four inches (using the four-inch equilateral triangle) from the condyles of the articulator. And the wax or tooth line will stand about 1½

inches from the floor of the articulator. Then press the heels of your cast down so as to conform to the curvature of an eight-inch circle, which is approximately the curvature of the average lower jaw. Place the upper model in position and all is ready for the grinding and mounting of the teeth. The fifth step is the grinding of the teeth. This is accomplished by grinding the occlusal surfaces of the bicuspids and molars so as to form an ogee surface. The great advantage in this method is that we have presented at the occlusal line a broad surface contact, instead of point contacts, as, in the teeth as we get them from the manufacturers.

The instrument I use for doing the grinding is a 2½x2¼ inch carborundum stone dressed on its face to an angle of about fifteen degrees, the dressing is accomplished by using a Morrison stone dresser.

In grinding up a full upper and lower the process is practically the same only the surfaces are reversed. In the upper the buccal cusps should be at a sharper angle, while the lingual cusp should be somewhat rounded. The lower is just the opposite—lingual sharp and buccal rounded.

We now come to the sixth and last step, which is the setting up of the teeth. Each of the preceding steps is of the greatest importance, but, unless this last step is carefully carried out the whole fabric falls to the ground so far as anatomical occlusion goes. In setting up a full upper and lower the six anterior teeth should be set up first, so that the general characteristics and contour of the face may be restored to normal relation. It does not take long for an experienced eye to determine just how much of an overbite will be required to restore the natural expression of the face. After this has been accomplished, commence with the bicuspids and molars on each side. These should run in nearly a straight line from the cuspid toward the ramus, first observing the necessary curvature which should approximate the eight-inch circle and is always governed by the length of the overbite.

The lingual cusps of the upper should always strike between the lingual and buccal cusps of the lower when the jaw is in repose, but when the lower is thrown to the right or left, the teeth on that side should strike upon their cusps; while upon the opposite side the lingual cusps of the upper should strike upon the

buccal cusps of the lower; this serves to equalize the action of the muscles on both sides of the jaws at the same time, and also prevent rocking and tilting of the plates.

In conclusion I wish to say that the several steps as outlined, if followed out, will bring satisfactory results to those of you who are interested enough in prosthetic dentistry to apply them in your practice. I know of no better way of proving or disproving the correctness of these principles than to make models of mouths that have the full complement of teeth in their normal relations, and mount them on a Binwill articulator according to the rules laid down. You will meet with defeats to be sure, but do not let that discourage you. Each time you overcome a trial you are much nearer the ideal. It is only by constant and untiring effort that we are ever able to reach the goal of our desires.—*Tri-State Record.*

"THE ONLY WAY." By J. P. Root, D.D.S., Kansas City, Mo. For any individual or corporation to advertise their way as "The Only Way" is egotism in its worst form.

One of our most important Western railroads covers all available bill boards, barns, fences and any natural scenery they can find advertising their line as "The Only Way." This statement is as near the truth as would be any advertisement the devil might issue, that there was only one way to his popular resort, when most of us from experience, know there are many ways, each one satisfactory to the individual traveling the route, and will land him ahead of time at the terminus.

Yet we daily hear or read the opinions of the positive dentists whose way of arriving at results is "The Only Way." We hear them praise themselves and condemn us, until, as far as I am concerned, their opinion is just as valuable to me, as would be the advertisement of our friend and compatriot, the devil.

It is results we are after, and if your way is satisfactory to you, probably it is as good, if not better, than mine.

If our egotistical friends could prove their results were any better than ours, we could listen to them with patience and with profit, at least a sufficient number of us could, to justify their present waste of natural gas.

Our prosthetic friend will describe "The Only Way" of con-

structing a rubber plate, giving details of the intricate raised lines he decorates the mucous side with, until it looks like a geometrical problem. Probably his plates fit no worse than mine, and as many are worn in bureau drawers as in the mouth, yet he is satisfied his is "The Only Way."

The most prolific breeder of only ways is the porcelain man. He will assure you, and while so doing convince himself, that low-fusing body is radically wrong. It has not the density, color, strength or any other qualification necessary. You are using it with absolute satisfaction to yourself and patients, proving there is more than one way.

While not the most prolific, but probably the most persistent only way crank, the pyorrhea specialist is a source of wonder to us; his special instruments, made according to his ideas, are the only ones to be used. He can demonstrate (to himself) their superiority over all others, and prove (to himself) the reason no one else uses them, because the manufacturer has a dead stock on hand of some antiquated patterns of other cranks, which they insist on selling to misguided dentists. There is no reason why their special instruments are not the ones for them to use, nor any reason why we should use them, or be condemned for not so doing. My opinion of pyorrhea treatment is 'tis the man behind the instrument, not the instrument itself, which produces results. Give me the man who can remove the deposits, from the end of the roots if necessary, and remove only the deposits. I am not hankering after any special form of man or instrument to remove deposits, accompanied by cementum, alveolar process, and gum tissue. The quiet, genteel removal of just plain, simple deposits satisfies me.

My early training in the handling of arsenic, either through some fault of mine or my teachers, resulted in my becoming an expert, a semi-only way specialist, in handling this destroyer, not pertaining especially in handling it, but the result was, I became a specialist in removing large portions of dead gum tissue, and frequently believed I should branch out as an oral surgeon, with a specialty of removing necrosed process, for my experience at this time was such I could probably have become wealthy if I had charged for the surgical operations performed. I also became an expert explaining why so many of my patients had ag-

gravated canker sores. These results came from the use of cotton and sandarac, or temporary stopping as protectors to the arsenic. Believing a change to some other system would benefit my patients, if not myself, I began the use of cements as a covering material for the arsenic, and to my surprise and pleasure quit treating canker sores. For fifteen years have followed this mode, proving it absolutely satisfactory, yet a short time ago two of my best friends in the dental profession (men of national reputation, as writers and teachers), called me an ignoramus, an ass, and other pet names not fit to mention in public, for using cement, when I could use cotton and sandarac. I blushed for my ignorance, and their density and continue to use cement, the proper thing for me to use in such cases, and I do not care whether it is plaster of Paris or putty, the material you are successful with is the one to use, for there is more than one way, just the same as there is in the destruction of the pulp, for today we undoubtedly use cocain in most instances, and just as undoubtedly will not use it as much in the future, that is, in the stubborn cases we frequently have, where an undue amount of cocain and especially an undue pressure results in forcing the cocain beyond the apical foramen, resulting in severe inflammation, which frequently leaves a tooth permanently sore. This is where I feel sorry for those of you who use only cocain, and have, as you say, entirely discarded the use of arsenic. I also feel sorry for your veracity, or rather, lack of it, when you make the statement that you do not have these inflammatory conditions, for while I may, just to be real gentlemanly, admit you are right, at the same time I probably believe you are—well, not truthful.

Just as open to criticism and probably more so is "the only way" arsenic advocate. No doubt, he can successfully destroy all pulps by its use, but he unnecessarily is burdening himself with an undue loss of time in many instances, yet he perseveres in its exclusive use—simply because it is "His Only Way."

The men who band all crowned teeth, firmly believing they are right, and cite cases to prove their premises, because such crowns successfully existed for twenty years, and cite their way as "The Only Way," are only a little worse than the man who insists that in all cases the "only way" is to use a bandless crown.

You can take every operation in dentistry—operative, prosthetic

or surgical, and find numerous "Only Ways" to perform the operations, and many of them will be correct. Remember, if your way is the successful one for you, it is the only way for you, but not necessarily for the other fellow. It is results you want, and the procedure bringing the desired results is the one for you. Stick to it, until convinced some other is better, then change, but do not condemn the other man because he does not follow your advice.—*Western Dental Journal.*

PREPARATION OF CAVITIES FOR INLAYS. By C. N. Johnson, M. A., L. D. S., D. D. S. When inlays were first introduced the general impression given the profession that the adhesive properties of cement could be relied upon to hold the inlay in place, irrespective of much depth to the cavity led to the formation of cavities too shallow and with insufficient attention to the principle of mechanical anchorage. Inlays should be anchored upon the same general mechanical plan as fillings, the only difference being in the details. It will, of course, be recognized in the beginning that cavities for inlays must be so formed that the matrix may be lifted from the cavity without distortion, and this idea being prominent in the mind of operators caused them in many instances to make the walls of their cavities too flaring, with the orifice much wider than the interior. This resulted in attenuated edges to the inlay and frequently to a lack of definiteness of form, leaving the cavity more or less saucer-shaped. This is wrong in principle and has quite generally proved a failure in practice. Cavities should be made with some depth and with walls so formed that the inlay will remain seated without tilting or rocking under pressure even before it has been cemented.

In opening up cavities it is true that there are many cases where the orifice must be quite widely extended to admit of entering a matrix into the cavity and removing it. This often involves cutting much sound tooth tissue, particularly in proximo-occlusal cavities in bicuspids and molars, where the decay in the proximal surface may have extended much wider bucco-lingually in the gingival region than it has nearer the occlusal surface. It will be seen at once that to fit a matrix to such a cavity it must be extended bucco-lingually very freely at the point where the

proximal surface joins the occlusal to bring it on a line with the cavity further rootwise. The practitioner who proposes using inlays in these cases must have the will to cut quite extensively, and there are many instances where the loss of sound tooth tissue is so very great that the discriminating operator will decide upon inserting a filling instead of an inlay. This is one factor in the choice between inlays and fillings which has not received sufficient consideration. While it is true that in the preparation of cavities, whether for inlays or fillings, we are frequently called upon to remove sound tissue for better access to the cavity and to establish marginal outlines at points where recurrence of decay will not take place, yet it is unjustifiable to sacrifice large portions of sound tissue in locations of practical immunity from decay in order to bring the cavity within the requirements for inlay work. In many of these cases a filling may be inserted to better advantage and with less injury to the tooth.

One cardinal principle in the formation of cavities for porcelain inlays is that they should be so shaped, if possible, as to leave no thin margins to the porcelain. A thin margin usually means a fractured margin in a short time. With cavities for gold inlays the exact opposite is true. One of the chief virtues of gold inlays is that the enamel margins may be freely bevelled and the gold allowed to lap over them—a relatively thin layer of melted gold being sufficiently strong for ample protection to the enamel. It is with this idea in mind that the following detail of cavity formation for the different classes is suggested.

Cavities in the Labial Surfaces of Incisors and Cuspids, and the Buccal Surfaces of Bicuspids and Molars:—The first essential in the preparation of these cavities is to open the cavity freely by breaking down all enamel undermined by decay. The axial or pulpal wall should be made perfectly flat so that the inlay will have a definite seat to rest upon. This is conveniently done with an inverted cone bur stood with its end looking toward this wall, and carried laterally across the floor of the cavity. There should be an angle formed between the axial wall and the surrounding walls, not a perfect right angle so as to leave the surrounding walls parallel, but very nearly so. If these walls were perfectly parallel it would manifestly be impossible to fit a matrix and remove it, but the nearer they approach to this the more securely

will the inlay be anchored, and the less necessity for relying on the cement as an adhesive agent. Cement should be used in the capacity of a sealing material between two joints and not as a glue to hold the inlay to the cavity. In short, the cavity should be so formed that there shall be some frictional retention against the surrounding walls, the inlay in many instances going to place with a snap. When cavities are formed along these lines there will be less trouble from inlays dropping out.

It might be imagined that the fitting of a matrix to such a cavity would be very difficult, but this is found in practice not to be so, and even if it did slightly complicate this part of the operation, it would be justifiable on account of the greater security of the inlay.

There should be no beveling of the enamel margins for porcelain except as the slight divergence of the surrounding walls at the orifice of the cavity forms a bevel. In the use of the inverted cone bur for forming the axial wall if the sharp angle of the bur should undercut the surrounding walls they may be trued up with a chisel or with a fissure bur stood with its end looking toward the axial wall and cutting with the side of the bur. The outline of a cavity formed as just indicated is shown in the two sections of an incisor.

In bicuspids the form of the axial wall is sometimes different from this on account of the difference in the form of the tooth. If the axial were cut perfectly flat in some cases of extensive decay it might result in exposure of the pulp, and so it should be given a convex form as indicated in the cross section of a bicuspid. This form facilitates the firm seating of the inlay fully as well as the flat form, and in some instances furnishes a more secure anchorage.

In extensive penetration of caries where the cavity runs under a strong wall of overhanging tooth tissue and it is deemed undesirable to cut this wall entirely away it may be permissible to excavate the cavity perfectly and fill the undercut with cement. After this has become hard the cavity may be prepared as usual. This practice is not often feasible on account of the fact that ordinarily when decay undermines a wall it does so in such a way as to weaken it beyond the possibility of retaining it with safety.

Upon broad surfaces such as the buccal surfaces of molars we

frequently find decay running along over a considerable area with little penetration into the tooth, and in these cases if the cavity is formed on correct mechanical lines with flat seat and proper angles it need not be made very deep. But an inlay for such a cavity should be of strong material and it is usually best in all buccal cavities of molars to insert gold inlays in preference to porcelain.

Simple Cavities in the Proximal Surfaces of Incisors and Cuspids.—These cavities must be opened sufficiently to the labial or lingual to admit of fitting the matrix, and it is therefore necessary to cut away one of these walls quite freely; though the ample separation of the teeth in advance of the operation will in some measure dispense with this necessity. The same provision for seating the inlay firmly in place should be made in these cavities as in others, and the axial wall should be made as flat as possible. If the labial wall has been cut away and the lingual wall remains standing with sufficient integrity to admit of it being left, there should be an angle formed between it and the axial wall, and even where the lingual wall must be removed it will be found possible to make a point angle in the gingivo-linguo-axial region. The gingival wall should be made at nearly right angles with the axial wall and almost parallel with the incisal wall, which should also join the gingival wall at an angle, so that the inlay will lock between the incisal and the gingival walls as if in a box.

In cases where there has been much breaking down of the lingual wall with a strong labial wall standing the cavity should be opened mostly to the lingual and the inlay inserted from this direction. In these cavities an angle should be made in the gingivo-labio-axial region so as to form a flat seat of resistance at this point, which will receive most of the stress brought to bear upon such an inlay.

Cavities in the Proximal Surfaces of the Anterior Teeth Involving the Incisal Angle.—These cavities present a more difficult problem for porcelain to meet than any of those where porcelain inlays are indicated, and yet their exposed position often calls for this kind of restoration. It is therefore necessary to study very carefully the forms that shall be given these cavities for the most secure anchorage and the greatest strength to the porcelain.

The operator must individualize his cavities and take advantage of every possible opportunity presented by the peculiarities of the case to gain depth to the cavity and bulk to the inlay.

It will usually be found that to gain security of anchorage some form of step must be made in the incisal region, and yet there are certain cases which do not lend themselves readily to this method of treatment. Ordinarily the step is made by cutting across the incisal edge at right angles to the proximal portion of the cavity, making approximately an L shape to the inlay, but sometimes it is not expedient to cut away the angle of the enamel in this manner. This is particularly true of those cases where the decay has involved the lingual surface far in advance of the labial in upper incisors, leaving little tissue in which to form a step. It is also true in some instances where there has been a simple proximal cavity of shallow depth in either an upper or lower tooth and the incisal angle has fractured off following a check in the enamel, leaving a clean sound surface of tissue along the axial wall with the enamel in perfect condition in the incisal region. These are cases which do not call for much incisal exposure to stress and it would seem too radical a procedure to cut away the incisal enamel, besides increasing the exposure. If the teeth in these cases are well separated a cavity may be prepared by cutting a shoulder in the axial wall looking toward the incisal and about one and one-half millimeters from the incisal edge. This should be supplemented by a rather deep and strong anchorage in the gingival region, and if the teeth are sufficiently separated the inlay may be slipped into place laterally. This form of anchorage is, of course, not the strongest from a mechanical point of view where great stress is exerted on the inlay, but in a somewhat close observation of many cases in practice it has proved sufficiently satisfactory to recommend its use in the class of cavities indicated.

Where the step anchorage is employed it is usually best to shorten both labial and lingual plates of enamel at least half way across the incisal edge, though this is not invariable. Sometimes the labial enamel may be left standing in upper incisors provided sufficient bulk can be given the porcelain in the step. In either case the lingual plate should be cut away more than the labial, and this is particularly true near the termination of the step. At

this point the lingual aspect of the step should be made to dip rootwise quite perceptibly to provide an interlock to the inlay. Care should be taken that there are no thin edges left to the inlay in any of its outlines, and this is accomplished by cutting the enamel with little or no bevel. It is also possible in some instances to add to the bulk of the porcelain in upper teeth, and thus increase its strength in the region of the step, by building it more fully lingually than the tooth originally was. The relation of the lower incisors will often admit of this and in some instances it is advisable to slightly shorten the lower tooth to give the needed space.

In the gingival region provision should be made for a broad seating of the inlay. The gingival wall should be flat and as wide mesio-distally and long labio-lingually as the available tooth tissue will permit. No undercutting is of course permissible, but the labial and lingual walls may be made to extend from the gingival wall in a very nearly parallel direction. This will give a box-like form to the cavity in this region and result in security to the inlay when cemented.

Cavities for the Restoration of Incisal Tips.—It is sometimes found practical where the incisal portion of an anterior tooth has been marred by faulty development so as to be dwarfed and unsightly, to restore the end with porcelain. It is also possible in some instances to do this where the incisal portion of an incisor has been broken off by a blow, though the cavity preparation for the two is entirely different. In the first instance there is usually a thin projection of tooth tissue standing on the end of the tooth as if the enamel had been stripped from it, and this may be utilized as a tenon over which the inlay may be mortised. The shoulder where the perfect enamel begins, and against which the inlay is fitted, should be cut at right angles to the tenon, and the latter so trimmed that the matrix may be fitted over it and removed without dragging.

In the case of a fractured tooth leaving the end flat, the problem of anchorage is greatly complicated. Retention must be gained by drilling into the fractured surface and the danger of approaching the pulp is always a factor in the case. If the fracture has not occurred far rootwise a groove may be made running mesio-distally across the tooth, shallow in the center to avoid

the pulp and deeper at each extremity where it passes mesially and distally from the pulp. If the fracture has extended so near the pulp as to reach a thick part of the tooth so that the labio-lingual width of the fractured surface will permit it, two grooves may be made, one to the labial and one to the lingual of the pulp, and these should join the labio-lingual grooves at either side. All grooves for this purpose should be made flat at the base and as broad and deep as the tissue will permit.

Cavities Involving the Proximal and Occlusal Surfaces of Bicuspids and Molars.—These complex cavities are usually better managed by the use of gold inlays and porcelain, and the detail of cavity formation herein suggested is in accordance with this idea. The most serviceable of all inlay work is in connection with the large restorations frequently necessary in these cases, and the operator should study carefully the possibilities of inlays in those positions in the mouth where the difficulty of inserting large fillings of foil has frequently proved a serious physical and nervous tax on patient and operator.

As has already been intimated the preparation of these cavities involves a wide extension bucco-lingually of the proximal portion of the cavity as it reaches the occlusal, and wherever a step can be made in the occlusal surface at right angles to the proximal the chief reliance for anchorage should be in this step. This is particularly true of bicuspids where the bulk of tissue for anchorage in the proximal region is not so great as in molars. The step should be given a dovetailed or interlocking form so as to avoid any possible tipping of the inlay, and this may usually be accomplished in one of two ways, dependent upon the form of the tooth. Where the cuspids are prominent and the depressions between them deep, it will usually be found that there is an appreciable concavity at the termination of the step most remote from the proximal cavity, and in this instance the step at this point may conveniently be made much wider bucco-lingually than it is midway between the cusps. The effect is to dovetail the step portion of the inlay against any possibility of tipping. Where the occlusal surface is more nearly flat with little prominence of the cusps and almost no depression between the interlock may be secured by deepening the termination of the step rootwise.

The same provision for a flat gingival wall in the proximal

portion should be made as in incisors, and the buccal and lingual walls should extend from the gingival in nearly a box-like form. If the cavity is prepared in this way and the inlay properly fitted it will snap into place with a frictional retention against the walls, which adds greatly to the sense of security. Such an inlay will not rock or tip on pressure, even before it has been cemented.

In case the enamel on the occlusal surface leading from the cavity is perfect and it is deemed not advisable to cut into it to form a step, retention against tipping may be secured by making the cavity slightly wider bucco-lingually at the axial wall than it is at the dento-enamel junction. This forms a dovetail and in cases where there is sufficient bulk of tooth tissue to work on it may be done without weakening the walls. It is, of course, apparent that the only direction in which a matrix or inlay can be removed from such a cavity is toward the occlusal surface.

In other cases where the dentin is so involved in the occlusal region as to leave the axial wall greatly concave and no foundation for a step, an interlock may be gained by shortening one of the cusps and building the inlay over it. It will be found in these cases that the dentin is quite extensively dissolved from under the enamel as it arches over the cusp, and the wall is made more secure by cutting down the cusp and protecting it with gold. This may be done with both cusps if necessary where there has been much undermining of the enamel, and even this extensive restoration may frequently be necessary without the pulp being involved. These are the cases which heretofore have been quite generally consigned to crowning, but an inlay restoration such as just indicated where even the entire occlusal surface is reproduced in gold, is in every respect preferable to a crown. And this is not only true of these cases, but of others still more extensive where the mesial, occlusal, and distal surfaces are involved in the same tooth, requiring a restoration of all three with gold overlapping the buccal and lingual walls.

The general form of the cavity in such cases must, of course, be governed by the conditions presented. Weak or overhanging enamel should be ground away quite freely for the double purpose of securing a firm foundation and for thoroughly opening up the cavity. The principle of the flat seat for the inlay to rest upon should be maintained as largely as possible because of the

necessity for security against dislodgement under the severe stress of mastication to which such restorations are subjected. The enamel margins should be beveled away quite freely with the utmost confidence that the gold will form an adequate protection to them.

In case the pulp is dead, advantage may be taken of the pulp-chamber for anchorage after the canals have been filled, but in the event of this additional anchorage not being required the chamber may be filled with cement and this leveled to form a flat seat for the inlay.

Cavities in the Occlusal Surfaces of Bicuspids and Molars.—It is a very rare condition which calls for an inlay in the occlusal surface of a bicuspid unless it involves some other surface. A simple occlusal cavity can be more judiciously managed with a filling than an inlay, and it is only in molars with cavities of appreciable extent where it is judicious to make occlusal inlays. The preparation of these cavities is not complicated. The floor or pulpal wall should be made flat so as to be at right angles to the stress of mastication, and the surrounding walls should be nearly parallel to make a mortised effect to the inlay.

In cases where there has been an extensive involvement of the tissue undermining the occlusal enamel, leaving it frail, it may be ground down slightly past the marginal ridge and the entire occlusal surface reproduced in gold.

The technic of cavity preparation for inlays is quite simple and the operation altogether more acceptable to the patient than for fillings. There is no necessity for applying the rubber-dam, and this to many is a great relief. The cutting is mostly done with chisels, excavators, and such rotary appliances as stones, wheels and disks. The only necessity for the use of burs in large cavities is in sharpening some of the line angles, and to flatten the walls left rounding by the stones. The fact that the grinding may be done under moisture reduces the pain to the minimum, and this is a great recommendation for this class of work.—*Bur.*

TREATMENT OF ABSCESSES. Thymol dissolves in oil of eucalyptus and forms a valuable agent in the treatment of alveolar abscesses, especially the mild forms of chronic blind abscesses.—GEO. W. COOK, *Western Dental Journal.*

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Editorial.

IS THE COMMUNITY RECEIVING BETTER SERVICE FROM THE DENTAL PROFESSION THAN FORMERLY?

We raise this question at this time on account of a great amount of discussion and commendation of the practice of filling teeth with inlays. From papers and discussions that we have read and listened to on this subject, and the extreme views presented, we believe that a presentation of more of the other side of the question favoring the filling of teeth with gold instead of set inlays might be profitable.

We admit from the outset that porcelain and gold inlays have their place, but when practitioners assert that they are better than gold and should be used exclusively, or almost exclusively, we propose taking issue with such a sentiment. At no time has there been a filling retained in the cavity with any of the cements at present on the market that was as good as a first-class gold filling. If the advocates of inlays will confine their use to the field in which they belong we then heartily indorse the inlay system.

Let us briefly outline some of the conditions where inlay work is most valuable before presenting the other side of the question. In mouths where there is a tendency to loss of the sockets of the teeth from the disease commonly called pyorrhea; in such mouths the method that will produce the least irritation of the peridental membrane is desirable. Another class of cases is where the predisposition to caries is extreme, where fillings of any kind inserted are only temporary, or, in other words, where decay will

recur in too short a time to make it profitable to insert gold fillings.

Then again the labial surfaces of the six front teeth; first, because of the appearance, and, second, because there is no subjecting of the inlay to occlusal strain, and porcelain inlays would be preferable in these places. In large restorations in either the molars or bicuspids where it is a question between cutting them down and crowning or inserting some form of inlay, either a gold or moldable porcelain inlay would be desirable. All of the above constitute suitable cases for inlay work.

The definition given by a prominent porcelain worker as to where inlays should be inserted was to the effect that they were suitable in all cases where the margins of the inlays did not come on the occlusal surface. This briefly outlines the field in which cemented inlays may be used safely.

What now is the field for gold fillings? Excepting the classes of cases described above, when a permanent filling is desired make it of gold. It must, however, be properly inserted, by which we mean with the exertion and skill necessary to make such a filling perfect. Some inlay advocates have gone so far recently, in several instances, as to assert that a filling could not be made of gold that did not leak. We have seen many of them that did not leak, although they had been inserted and had lasted a lifetime. We have had fillings under observation for thirty-five years, many of them that are as good to-day as when inserted. In fact, in our opinion, the great majority of good gold fillings will outlast any inlay twice over that can be made.

It is the arresting of dental caries with gold fillings that has made the dental profession of this country famous. The great men of our profession have been those who filled teeth successfully with gold, and there have been many of them, and are yet, that can make gold fillings permanent without any guesswork. Further than this the members of the profession who have had the necessary qualifications to make a success of arresting caries with gold fillings, by the same line of ability have become, in many instances, the original investigators in the various advanced steps that have taken place in the last forty years. It is true, it requires skill and painstaking, while with inlay work there is a

fascination and a relief from the great strain of operating at the chair inseparable to the inserting of gold fillings. But this is no excuse for the abandonment of filling teeth with gold.

The tendency of inlay work is to deteriorate the service of the dentist. Inlays are made, and if they do not fit well the cement is filled in the corners and covers up a multitude of sins. In the inserting of a gold filling the operator knows when it is complete, and in finishing his work can remedy any shortcomings before the dam is removed. In fact, the filling of teeth with gold is not guesswork if the operator is skilled enough to do it properly, as he can know to a certainty when his work is perfect.

It will be a sorry day for the practice of dentistry and for the community, too, when filling teeth with gold is abandoned. The day may come when some form of filling will be possible that will take the place of gold, but such a material as would be indicated in such event is not at hand at this time.

Notices.

MAINE DENTAL SOCIETY.

The annual meeting of the Maine Dental Society will be held in Rockland on July 16, 17 and 18, 1907.

ALABAMA DENTAL ASSOCIATION.

The Alabama Dental Association will hold its annual convention in Birmingham, May 14 to 17, 1907. An elaborate program is being prepared.

SOUTH CAROLINA DENTAL ASSOCIATION.

The annual convention of the South Carolina Dental Association will convene in Anderson, S. C., July 2, 3 and 4, 1907.

MICHIGAN STATE DENTAL ASSOCIATION.

The dates set for the Michigan State Dental Association meeting to be held at Saginaw have been changed to June 4 and 5, 1907, instead of June 6 and 7, as announced in our last issue.

MIAMI VALLEY DENTAL ASSOCIATION.

At the meeting of the Miami Valley Dental Association, April 1, 1907, at Dayton, the following officers were elected: President, P. S. Bollinger; Vice-President, H. A. Penfield; Treasurer, M. C. Saul; Corresponding Secretary, E. B. Tizzard; Recording Secretary, F. E. Dano.

HORNELL DENTAL SOCIETY.

The dentists of Hornell, N. Y., and vicinity recently formed the Hornell Dental Society and elected the following officers: President, R. W. Barney; Vice-President, E. J. Sweet; Secretary, T. D. Saunders; Treasurer, M. B. Cotterell. The next meeting will be held on May 20th.

TORONTO DENTAL SOCIETY.

At the last meeting of the Toronto Dental Society, April 16, 1907, the following officers were elected for the ensuing year: President, R. G. McLaughlin; First Vice-President, A. J. McDonagh; Second Vice-President, Dr. Eaton; Secretary, C. A. Kennedy; Treasurer, C. H. Clarkson.

PENNSYLVANIA STATE BOARD OF DENTAL EXAMINERS.

The Pennsylvania State Board of Dental Examiners will conduct examinations simultaneously in Philadelphia and Pittsburg, June 12 to 15, 1907.

For application papers and full particulars address Dr. Nathan C. Schaeffer, Secretary Dental Council, Harrisburg, Pa.

ANDERSON COUNTY DENTAL SOCIETY.

The organization of the Anderson County Dental Society was perfected April 4, 1907, and the following officers were elected for the ensuing year: President, A. P. Johnstone, Anderson; Vice-President, W. W. Chisolm, Anderson; Secretary, W. O. Sherard, Iva; Treasurer, W. Avery, Anderson.

MICHIGAN STATE BOARD OF DENTAL EXAMINERS.

The Michigan State Board of Dental Examiners in Dentistry will hold their next meeting for the examination of candidates at the Dental Department of the University of Michigan at Ann Arbor, May 22, 23, 24 and 25, 1907.

E. A. HONEY, Secy.,
Kalamazoo, Mich.

CENTRAL DENTAL ASSOCIATION OF NEBRASKA.

At the third convention of the Central Dental Association, held in David City in April, 1907, the following officers were elected for the ensuing year: President, J. R. Bell, Shelby; Vice-President, E. D. Taylor, David City; Secretary, N. R. Hatfield, York. The next convention will be held in October at York, Neb.

SEVENTH DISTRICT DENTAL SOCIETY OF NEW YORK.

At the thirty-ninth annual meeting of the Seventh District Dental Society (N. Y.), held March 27, 1907, the following officers were elected for the ensuing year: President, W. H. Povall, Mt. Morris; Vice-President, E. G. Link, Rochester; Recording Secretary, C. W. LaSalle, Rochester; Corresponding Secretary, L. H. Gilbert, Rochester; Treasurer, LeRoy Requa, Rochester.

NEW ENGLAND ASSOCIATION OF DENTAL EXAMINERS.

The annual banquet of the New England Association of Dental Examiners was held in Boston, April 2, 1907, when the following officers were elected for the ensuing year: President, A. E. Maxfield, Holyoke, Mass.; Vice-President, Dr. Sawyer of the New Hampshire Board; Recorder, A. L. Midgley, Providence, R. I.

SOUTHERN MICHIGAN DENTAL ASSOCIATION.

At the annual meeting of the Southern Michigan Dental Association held April 10, 1907, in Battle Creek, the following officers were elected for the ensuing year: President, O. E. Lamphear, Paw Paw; Vice-President, James B. Doyle, Grand Rapids; Secretary and Treasurer, C. W. Johnson, Lawton. It was voted that the next meeting be held at Jackson.

CENTRAL PENNSYLVANIA DENTAL SOCIETY.

At the annual convention of the Central Pennsylvania Dental Society held April 9, 1907, at Huntingdon, the following officers were elected for the coming year: President, C. V. Mierley, Huntington; Vice-President, F. B. Evans, Barnesboro; Re-elected Secretary, H. E. Crumbaker, Altoona; Treasurer, H. A. Wehrle, Altoona. The next meeting is to be held at Altoona.

JEFFERSON COUNTY DENTAL SOCIETY (ALABAMA).

The Jefferson County (Alabama) Dental Society was recently organized at Birmingham and the following officers elected: President, L. F. Luckie, Birmingham; Vice-President, G. W. Reese, Birmingham; Secretary and Treasurer, J. A. Blue, Birmingham; Corresponding Secretary, L. Taylor, Birmingham; Executive Committee—W. D. Carmichael, J. C. Westbrook and Dr. Irwin, all of Birmingham.

NEBRASKA STATE DENTAL SOCIETY. .. ..

The thirty-first annual meeting of the Nebraska State Dental Society will be held in Lincoln, May 21, 22 and 23, 1907, at the Lincoln Dental College. The Lindell Hotel will be headquarters. All reputable members of the profession are invited to attend.

M. E. VANCE, Secy.,
Lincoln, Neb.

MONTANA DENTAL SOCIETY.

The fourth annual meeting of the Montana Dental Society was held April 12 and 13, 1907, in Helena, the following officers being elected for the ensuing year: President, J. D. McDonald, Anaconda; First Vice-President, Mark Chamberling, Cody, Wyo.; Second Vice-President, H. J. Wirth, Helena; Secretary, F. H. Bimrose, Butte; Treasurer, B. J. Keenan, Butte; Master of Clinics, T. M. Hampton, Helena. The next meeting will be held in Butte.

FIFTH DISTRICT DENTAL SOCIETY OF NEW YORK.

The Fifth District Dental Society held its thirty-ninth annual meeting at Syracuse, April 10, 1907, and the following officers were elected for the coming year: President, I. C. Curtis, Fulton; Vice-President, C. A. Sayers, Watertown; Treasurer, R. C. Turner, Oswego; Secretary, R. W. Barry, Oswego; Correspondent, Abram Hoffman, Syracuse; Censors, Charles E. Cherry, Syracuse, and I. C. Curtis, Fulton. It was decided that the next meeting should be held at Schenectady.

OHIO STATE BOARD OF DENTAL EXAMINERS.

The regular semi-annual meeting of the Board of Dental Examiners of the State of Ohio will be held in Columbus, June 25, 26 and 27, 1907.

Only graduates are eligible to examination.

Application, accompanied by fee ($20), should be filed with the secretary by June 15. For further information address

H. C. BROWN, Secy.,
125 E. State St., Columbus, Ohio.

THIRD DISTRICT DENTAL SOCIETY OF NEW YORK.

At the thirty-ninth annual meeting of the Third District Dental Society (N. Y.) held at Albany, April 15, 1907, the following officers were elected for the ensuing year: President, C. E. Allen, Albany; Vice-President, L. S. Blatner, Albany; Secretary, C. H. Bird, Troy; Treasurer, P. S. Oakley, Troy; Corresponding Secretary, F. Le Grand Ames, Albany; Editor, L. S. Baltner, Albany; Executive Committee—J. L. Appleton, Albany; G. A. Englert, Catskill; M. J. Barrett, Troy.

CENTRAL DISTRICT DENTAL ASSOCIATION OF MASSACHUSETTS.

At the annual meeting of the Central District Association of Massachusetts, held April 15, 1907, in the office of Dr. R. H. Hull, Worcester, the following officers were elected: Secretary, H. P. Cooke; Treasurer, W. F. Gilman; Editor, A. E. Wheeler; Executive Committee, J. E. Flannagan, J. Frank Cooper, R. H. Gould; Councilor for five years to the Massachusetts Dental Society, R. H. Hull.

SOUTHERN MINNESOTA DENTAL SOCIETY.

The Southern Minnesota Dental Society held its twenty-second annual convention in Mankato, April 8, 9 and 10, 1907, and the following officers were elected for the ensuing year: President, F. J. Yerke, Owatonna; Vice-President, E. E. Smith, Plainview; Secretary, C. A. Hintz, Springfield; Treasurer, M. B. Wood, Mankato; Executive Committee—E. E. Smith, Plainview; J. R. Hollester, Sleepy Eye; C. P. Peterson, Mankato. Membership Committee—Chester Burrill, Heron Lake; W. H. Ball, Chatfield; Dr. Mihlais, New Ulm.

CONNECTICUT STATE DENTAL ASSOCIATION.

At the forty-third annual convention of the Connecticut State Dental Association held in New London, April 16 and 17, 1907, the following officers were elected for the ensuing year: President, F. Hindsley, Bridgeport; Vice-President, W. O. Beecher, Waterbury; Secretary, E. S. Rosenbluth, Bridgeport; Treasurer, F. W. Brown, New Haven; Assistant Secretary, A. E. Carey, Hartford; Librarian, R. H. Keeler, New London; Editor, A. H. Spicer, Westerly, R. I.; Executive Committee—F. G. Murlless, Jr., Windsor Locks; F. J. Irbe, Waterbury, and W. V. Lyon, Bridgeport.

STATE BOARD OF DENTAL EXAMINERS OF MINNESOTA.

The State Board of Examiners of Minnesota will hold a special meeting at the Dental Building of the State University in Minneapolis on June 6, 7 and 8, 1907. All applications must be in the hands of the secretary by 10 o'clock, June 6, as examinations will begin at 10:30 o'clock sharp. All blanks, paper and patients supplied by the board. Operating instruments, etc., must be brought by the applicant. Any further information will be given by addressing

GEO. S. TODD, Secy.,
Lake City, Minn.

WISCONSIN STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Wisconsin State Board of Dental Examiners for examination of candidates for license to practice dentistry in Wisconsin will be held Monday, June 10, 1907, at the Wisconsin College of Physicians and Surgeons, Milwaukee, Wis.

Application must be made to the secretary fifteen days before examination. The candidate must be a graduate of a reputable dental college or have been engaged in the reputable practice of dentistry for four consecutive years, or an apprentice to a reputable dentist for five years.

For further information apply to J. J. WRIGHT, Secy.,
1218 Wells Bldg., Milwaukee, Wis.

ALUMNI SOCIETY OF THE PHILADELPHIA DENTAL COLLEGE.

The Alumni Society of the Philadelphia Dental College will celebrate Alumni Day, Friday, May 31, 1907, in the College Building, Eighteenth and Buttonwood Sts., Philadelphia, Pa.

The morning will be occupied with a series of clinics which will interest every operator in the dental profession.

At 2:30 p. m. the business meeting will be held in the amphitheater of the college, when Dr. W. T. Wyckoff will deliver the presidential address; Dr. L. A. O'Brien of New York city will read the annual paper. After the discussion of this paper the faculty will have some very interesting professional topics to present and announcements to make.

The annual banquet will be held in the evening. An announcement of

the time, the place and cost per plate will be made later on. The faculty, students, graduating class and alumni are cordially invited to attend the banquet. The dental profession is invited to the clinics and business meetings.

ALPHONSO IRWIN, Secy.,
Camden, N. J.

SOUTH DAKOTA STATE BOARD OF DENTAL EXAMINERS.

The next examination of the South Dakota State Board of Dental Examiners will be held at Sioux Falls, S. D., beginning at 3 o'clock, June 6, 1907, and continuing three days.

All candidates are required to bring operating instruments, including dental engine, and such other appliances and materials as are necessary to do crown and bridge work.

All applications, together with $10 fee, must positively be in the hands of the secretary by June 3, and no applications will be considered thereafter.

G. W. COLLINS, Secy.,
Vermillion, S. D.

FLORIDA STATE BOARD OF DENTAL EXAMINERS.

The Florida State Board of Dental Examiners will meet June 3, 1907, at 10 o'clock, in Jacksonville, Fla., for the purpose of examining applicants for license to practice in this state.

In addition to the written examination, applicants will be required to put in one gold filling, one alloy filling, and solder and finish one four-tooth bridge under supervision of Board.

Bring bridge ready for investing.

Applicants must furnish instruments in practical work.

Only graduates of reputable dental schools are admitted to examination.

W. G. MASON, Secy.,
Tampa, Fla.

KENTUCKY STATE BOARD OF DENTAL EXAMINERS.

The Kentucky State Board of Dental Examiners will meet for the examination of applicants at Louisville on June 4, 1907, at The Masonic, commencing at 9 o'clock a. m.

Each applicant for examination shall be required to deposit with the Secretary of the Board his or her recent photograph, with signature on the reverse side, both of which shall be certified to by the Dean of his or her graduating college, or other parties acceptable to the board. Applicants must be graduates of reputable dental colleges.

Application for examination must be made upon blanks furnished by the Board and must be accompanied by a fee of $20.

J. RICHARD WALLACE, President,
The Masonic, Louisville, Ky.

DENTAL ALUMNI SOCIETY, UNIVERSITY OF PENNSYLVANIA.

The twenty-seventh annual meeting of the Dental Alumni Society of the University of Pennsylvania will be held in Philadelphia, June 15, 17 and 18, 1907.

This will be an extremely interesting meeting, the number of clinics and social features being unusually large.

PROGRAM.

Saturday, June 15.

3:00 p. m. Aquatic sports in the gymnasium pool. Races, water polo and fancy swimming.

4:00 p. m. Varsity Baseball Team vs. Graduates, Franklin Field. Admission free.

6:00 p. m. Alumni supper, Weightman Hall Gymnasium.

7:45 p. m. Annual business meeting, General Alumni Society, Weightman Hall.

8:00 p. m. Reception to wives of alumni, Houston Hall and adjoining campus.

8:30 p. m. Reunion of classes in the Dormitory Triangle and lighting of the bonfire. Special quarters for alumni of the Dental Department.

Monday, June 17.

10:00 a. m. Clinics and demonstrations, Dental Hall, both morning and afternoon.

7:00 p. m. The twenty-seventh annual banquet, Dental Alumni Society, The Bartram.

Tuesday, June 18.

10:00 a. m. Annual business meeting, Dental Hall.

2:00 p. m. University grounds and buildings open for inspection.

There will be special rates on all railroads. For further information address Victor Cochran, Secy., 1628 N. Seventeenth St., Philadelphia, Pa.

NATIONAL DENTAL ASSOCIATION CLINIC.

There is every indication that there will be a large clinic held in Minneapolis on July 31 and August 1.

Many men have signified their intention to be present and take part in either the operative work, or else give some kind of a table clinic. If I am to judge from what has been written to me, then I feel certain that we shall have a most interesting meeting so far as the clinic is concerned.

In the past there has been some criticism regarding the clinic room being so far away from the headquarters. In no sense of the word is the Clinic Committee to be blamed for this condition of affairs. It must take what is offered or else not have clinical demonstrations. Now, this year there is every assurance that this condition will be materially changed. Dr. F. B. Kremer, the Chairman of the Local Committee of Arangements, is a man of much experience in dental society work. Therefore he is

the very man for the place. He knows what is desired, and beyond question he will secure a hall for the clinic room in close proximity to the headquarters. This year, at least, those contemplating being with us need not worry about this special part of the meeting, for Dr. Kremer is a man who does not neglect anything.

From reports which are constantly being received there is every reason to believe that we shall hold a most successful clinic.

The following gentlemen are acting as District and State Chairmen:

For the New England States—Dr. G. E. Savage, Worcester, Mass.

New York—Dr. F. L. Fossume, New York.

New Jersey, Delaware and District of Columbia—Dr. M. F. Finley, Washington, D. C.

Maryland—Dr. C. N. Ginrich, Baltimore, Md.

Virginia and West Virginia—Dr. F. W. Stiff, Richmond, Va.

North and South Carolina and Georgia—Dr. H. H. Johnson, Macon, Ga.

Florida, Alabama and Mississippi—Dr. A. T. Reeves, Selma, Ala.

Tennessee and Kentucky—Dr. W. M. Slack, Memphis, Tenn.

Pennsylvania—Dr. H. E. Friesell, Pittsburg.

Ohio—Dr. H. C. Brown, Columbus.

Indiana—Dr. C. D. Lucas, Indianapolis.

Illinois—Dr. F. W. Gethro, Chicago.

Wisconsin—Dr. S. H. Chase, Madison.

Manitoba—Dr. K. C. Campbell, Winnipeg.

It is not an easy matter to arrange the program, and I shall be grateful to all chairmen for their list of clinicians. The earlier the list is sent the better.

E. K. WEDELSTAEDT,
Chairman, Clinic Section,
New York Life Bldg., St. Paul, Minn.

LATEST DENTAL PATENTS.

844,395. Tooth brush, Eduard Penkala, Zagrab, Austria-Hungary.
844,781. Dental gold pellet holder, Henry P. Davis, Washington, D. C.
845,064. Tooth brush, Frederick P. Browne, Warren, R. I.
845,822. Head-rest for chairs, David Sarason, Berlin, Germany.
845,835. Gas regulator for dental vulcanizers, Elmer E. Wightman, Chicago, Ill.
846,030. Instrument tray, William G. Hullhorst, Toledo, Ohio.
846,420. Dental bracket, Albert W. McKenney, Roxbury, Mass.
846,900. Toothbrush, William O. Bloom, Worcester, Mass.
846,598. Pyrometer, John F. Hammond, Brewster, N. Y.
847,591. Dental handpiece, Henry S. Miller, Rochester, N. Y.
847,778. Tooth separator, James W. Ivory, Philadelphia, Pa.
847,828. Toothpick holder, Wilhelm Sandleben, Hamburg, Germany.

News Summary.

JOHN C. TEATS, an aged dentist of Sterling, Ill., died March 29, 1907.

J. X. SKELLY, 40 years old, a dentist of Chicago, died March 26, 1907.

J. M. MCCONNELL, a dentist of Cornelia, Ga., died at his home March 15, 1907.

E. R. DIXSON, 34 years old, a dentist of Pittsburg, Pa., died April 16, 1907.

W. C. GIGALSKI, 29 years old, a dentist of Buffalo, N. Y., died April 11, 1907.

W. J. LAURENCE, 88 years old, one of Chicago's pioneer dentists, died April 11, 1907.

JAMES GOODWILLIE, a retired dentist of New York City, died from pneumonia, recently.

H. E. ROBINSON, 62 years old, a prominent dentist of Maryville, Mo., died April 15, 1907.

DANIEL L. OVERHOLSER, 71 years old, for many years a dentist of Logansport, Ind., died April 18, 1907.

JAMES CURTIN, 28 years old, a dentist well known in Toronto, died in St. George, Grenada, recently.

W. A. STEVENS, 67 years old, a practicing dentist of Chicago for over forty years, died April 15, 1907.

FRANK COWDEN WICK, 30 years old, a dentist of St. Louis, Mo., died from heart disease, March 24, 1907.

C. E. KELLY, a dentist of Brooklyn, N. Y., and formerly of Bay Ridge, died from consumption, April 18, 1907.

C. A. KITCHEN, a former dentist of Rockford, Ill., died at Santa Cruz, California, after a year's illness, April 13, 1907.

G. R. LEONARD, a dentist of Mandan, N. D., former member of the State Dental Board, died from appendicitis, April 20, 1907.

L. P. PAUL, 39 years old, a dentist of Jerseyville, Ill., who formerly practiced in Silver City, Colo., died April 20, 1907.

ALEXANDER M. BRUNN, 33 years old, a dentist of Milwaukee, Wis., died following an operation for appendicitis, April 21, 1907.

R. L. PRUITT, a dentist of Newark, N. J., and formerly of Aurora, Ill., was killed by a street car in Jersey City, April 29, 1907.

A. J. SCHLEUTER, 28 years old, a dentist of Aberdeen, S. D., killed himself by the accidental discharge of his gun, March 25, 1907.

JOHN H. SMITH, 74 years old, one of the best known men of the profession in Vermont, died from heart disease, April 10, 1907.

ELI L. MOORE, a dentist of Pickney and formerly of Bay City, Mich., met death by explosion of his shotgun at Portage Lake, Mich., April 9, 1907.

DENTIST HELD FOR MURDER.—A dentist of Far Rockaway, N. Y., is accused of shooting and killing his wife in their home, April 9, 1907.

P. P. WALKER, 36 years old, a dentist of Brandon, Miss., secretary of the State Board of Dental Examiners, died from the effects of a surgical operation, April 14, 1907.

DENTIST SUES FOR BILL.—Suit for the recovery of $25 for dental services was brought by a Springfield (Mass.) dentist. Decision in the case was reserved.

FALSE TOOTH SWALLOWED.—William Dumphrey, of Louisville, Ky., is near to death at the City Hospital from the effects of having swallowed a false tooth.

PULLING OF TOOTH PROVES FATAL.—A well known resident of Dalton, City, Ill., died March 26, 1907, from blood-poisoning which followed the pulling of a tooth.

DENTIST GETS DECISION.—A dentist of Buffalo was given a decision by Judge Hodson, April 18th, against a man for a dental bill which the defendant claimed was for work improperly done.

FIRES.—Dr. Sturgeon, Salem, Ohio, recently; loss $600.—J. G. Morgan, Savannah, Mo., March 27, loss $1,000.—Lee C. Reid, San Francisco Cal., Surgical and Dental Supplies, April 6th, loss but small.

ACCUSED OF SELLING COCAIN.—A dentist of Baltimore, Md., is on $500 bail, charged with having sold cocain. The principal witness testified to this fact and the case is coming up for further hearing later on.

NECKS.—"There's a great difference in necks," said the dentist in his effort to adjust the head-rest to his patient. "Yes," replied the latter; "I once heard a hangman make the same remark."—*Exchange.*

ALLEGED SLANDERER FINED.—April 10 a dentist of Springfield, Mass., was awarded damages amounting to $6.50 against another dentist of that city. Suit had been brought for $1,000 on the ground of alleged slander.

EUCA-PERCHA.—If the euca-percha gets too stiff to work well, add eucalyptol, warm slightly and stir. Add enough to make it of a creamy consistency, and it will remain so for weeks.—*Western Dental Journal.*

TO HOLD BROACH SECURELY.—If the broach-holder does not hold the broach securely, take the broach to the crown anvil and give it a few taps with a hammer to flatten or square the end.—*Western Dental Journal.*

ALUMINUM IN PROSTHETIC DENTISTRY.—Dr. Booth Pearsall of London, after several years of experience, recommends for persons subject to gout the use of aluminum base with rubber attachments.—*Dentists' Magazine.*

BITTEN.—Silas Heck—"Squire Bobbins bought a hull set o' store teeth from one o' them there mail order fellers fer $2.98."

Zeke Slack—"I be jiggered! Beats all whut some folks'll bite on."

SHALLOW EROSION CAVITIES.—In sensitive superficial cavities, due to erosion or abrasion, a warm solution of trichloracetic acid in full strength, applied two or three times, the cavity being dried between applications,

will often enable one to penetrate to sound non-sensitive dentin, when the cavity may be prepared as desired.—Geo. Gow, *Dominion Dental Journal.*

Settled Out of Court.—A suit which has attracted much attention, brought by a Fifth Avenue dentist in New York against a Worcester society woman to recover a dental bill of $2,100, has finally been settled out of court.

Concussion of the Brain From Teeth Extraction.—Upon his return from having a molar tooth pulled, Chas. Weimer of Marshall, Mich., fell suddenly unconscious and the attending physician reports that the patient is suffering from concussion of the brain and is not expected to recover.

Dear Sport.—A dentist of New Oxford, Pa., and his companion had an unpleasant lesson in the state fish laws which cost them $12.50 each to learn. The claim was that they were using more rods than is allowed by the law.

Special Legislation Needed in This Case.—Sadie Holmes of Tillonsburg, Ontario, after a long and spirited fight has at last been authorized by bills passed in the Provincial Legislature to practice her profession, namely, dentistry.

Not Strictly Dental.—The visitor suppressed an exclamation of horror, and slipped away to the library to seek aid from the dictionary. She learned that "galoshes" in England and "rubbers" in New York may be "gums" in Pittsburg.

Sentenced to Fifty Years' Imprisonment.—Dr. E. B. McCoy, formerly a dentist of Independence, Kan., whom we reported last month as being denied another trial, has since been sentenced to fifty years of hard labor for the murder of his wife. He is now forty years old.

Dentist Held on Ugly Charge.—A dentist of Chicago Junction, Ohio, is held in connection with a leading physician of that vicinity on the charge of having performed a criminal operation on December 29, 1906. Both were arrested and later released on $1,000 bond each.

Treatment of Sensitive Cervical Margins.—If sodium bicarbonate is incorporated in the tooth powder used by the patient, sensitiveness will be relieved, and he will be enabled to thoroughly masticate, thus bringing about a normal condition of the saliva.—D. Spalding, *Dental Register.*

Truth.—Chase (to dentist)—"I won't pay anything extra for the gas. Just yank the tooth out even if it does hurt a little."

Dentist—"I must say you are very plucky. Just let me see the tooth."

Chase—"Oh, I haven't any toothache. It's Mrs. Chase. She'll be here in a minute."

The Pure Food and Drug Law.—Since the first day of January, 1907, every medicine of every kind or description, even those put up on physicians' prescriptions, which are transported across the state lines and contain alcohol (including standard tinctures), morphin, opium, cocain, heroin, eucain, chloroform, cannabis indica, chloral hydrate, or acetanilid, or any

derivative thereof, are required to be so labeled, with the proportion contained therein.—*Summary.*

LIFE SAVED, THANKS TO STRONG TEETH.—In the midst of a quarrel a pistol was pulled and fired at Henry Ricka, a colored man of Wilmington, Del. To his own and everybody's surprise, after a second or two he calmly spat out the bullet, which fortunately had struck him square in the mouth, and three teeth.

ARRANGING A LOWER SET OF TEETH.—In arranging a lower set commence with the second bicuspids, as four-fifths of the lower anterior teeth are too wide for the uppers, as it is essential that the bicuspids properly occlude; then use teeth just wide enough for the space between the bicuspids.—L. P. HASKELL, *Dentist's Magazine.*

ROOT DRYER.—Upon the appearance of the Evans Root Dryer it commended itself to me and I began its use. Coincident with its adoption my proportion of roots which developed trouble increased. The moment this was realized I discontinued its use and the ratio dropped again to normal. —C. EDMUND KELLS, JR., *Dental Review.*

AMALGAM RESTORATIONS.—For molars, or even bicuspids, with extensive destruction of crown area amalgam restorations are strong, permanent, hygienic and serviceable operations. They fill a place in practice that cannot be filled by crown or inlay because of either hygienic or economical reasons.—GEO. R. WARNER; *Items of Interest.*

SERIOUS RESULT FOLLOWING THE USE OF LOCAL ANESTHETIC.—E. F. Flanders of Battle Creek, Mich., is in a very critical condition owing to the effects of the local anesthetic used in a case of tooth extraction. Soon after its administration his face began to swell and later a species of necrosis set in. Very little hope is given for his recovery.

SORENESS AFTER REMOVAL OF PULP.—To prevent soreness after removal of pulp under pressure anesthesia, wait for hemorrhage to subside and place in the canal a dressing of cotton saturated with extract of witch-hazel, full strength, letting it remain until the next sitting, when the root canal can be filled.—G. W. PRINGLE, *Dental Cosmos.*

COMPENSATION?—A Columbus, Ohio, dentist has recently been charged with kissing a young lady patient three times. She still owes him $9.00 on her account, but claims that the kisses should go on the account and refuses to pay. Her charge, however, is denied by the dentist, and he retains possession of the teeth made for her.

DAMAGE SUITS.—A laundress of Denver, Colo., has filed suit against a dentist of the same city, demanding $2,000 for alleged injuries and $315 for doctor's bill. She claims that she visited the dentist to have a molar extracted and the dentist injected cocain into her gums and what she believes to be aromatic spirits of ammonia into her arms, causing the latter to become so inflamed and sore that they could not be used for three months.—A dentist of Springfield, Mo., is being sued for $10,000 damages

by a young woman of that city, her charge being that the anesthetic used has impaired her health.—A young woman of Chicago, Ill., has filed suit for $15,000 damages against a dental firm of Chicago. She claims that owing to careless work done her personal apperance and general health have been greatly injured.

DENTIST AND LANDLADY DISAGREE.—After an eighteen months' fight in and out of court between a New York dentist and his landlady, the justice in an effort to bring peace between them has granted the landlady an injunction restraining the dentist from renting to negroes or Chinese, which he had threatened to do as revenge after vacating his lease.

DENTIST FOR MALDEN SCHOOLS.—The school committee of Malden, Mass., has arranged matters with the Malden Dental Society, providing for the examination of all the school children's teeth by a dentist. A chart is to be filled out in each case telling the defects and the parents will then be obliged to have the children's teeth put in first class shape.

PAIN AFTER TOOTH EXTRACTION.—The extraction of an abscessed tooth is generally followed by great pain. I have found lysol to be the ideal remedy in such conditions, placing it undiluted in the socket. It will relieve the pain immediately, help to check the hemorrhage, and establish antiseptic conditions in the socket.—G. B. WINTER, *Dental Era.*

PREPARING SENSITIVE CAVITIES.—A comparatively painless method of cutting away a large body of sensitive dentin is to have the stones or burs run in water. I am able to do so-called heroic cutting with the stones run in water, so that the water is almost a running stream upon the bur or stone, and it can be run at a high rate of speed.—E. J. PERRY, *Dental Review.*

CARE OF CHILDREN'S TEETH.—I never insert a filling in a child's tooth the same day that I prepare the cavity, my theory being that the preparation of the cavity acts as an irritant, more or less. I prefer to always insert a dressing which will restore the tooth to its normal condition; and I do the same with adults.—J. E. FORSYTH, *Australian Journal of Dentistry.*

SUIT DECIDED IN DENTIST'S FAVOR.—The jury in the case of Miss Adah C. Green against Dr. V. G. Maercklein, a dentist of Milwaukee, Wis., returned a verdict of not guilty. Miss Green sued the dentist for $1,000 damages, charging that he had extracted the wrong tooth. The defense was that the patient bit the dentist's finger and he knocked out the tooth by mistake.—*Summary.*

ACCIDENTS.—Recently the vulcanizer in Dr. W. P. Haun's office at Sheridan, Ark., exploded and was blown out of the window. Although Dr. Haun was standing over the vulcanizer at the time, he escaped unhurt.—Dr. J. L. Morris, a dentist of Wall Lake, while hunting, had the misfortune to lose his hearing, this being caused by one of the party discharging a gun over his head. The doctors give little hope of his regaining the

lost sense.—Dr. Jones of Montfort, Wis., narrowly escaped a serious accident April 5, when his sterilizer exploded, the contents being thrown into his face and all over his clothing. He was almost knocked over by the force of the shock, but the burns fortunately are not serious.

PERIODICAL EXAMINATION OF BRIDGES.—Patients should be thoroughly impressed with the necessity of having bridges examined at least twice a year, in order that if any imperfections exist they may be corrected by removal, which will give an opportunity for careful examination of each abutment, and the performance of such services as will best benefit the patient.—*Dental Cosmos.*

VITIATED SALIVA.—Salivary excesses, because of gingivitis, produce digestive disorders either by the swallowing of vitiated saliva by pathologically diluted gastric juice, or cause indigestion, vomiting and, possibly, diarrhea, by the loss of the saliva externally by expectoration. Digestion particularly is interfered with through insufficient insalivation.—W. T. MCLEAN, *Medical Brief.*

CONVICTS AS PATIENTS.—It is probable that the Utah legislature will enact a law permitting candidates for certificates before the Examining Board to give practical demonstrations of their ability by operating on penitentiary convicts. Such recommendation is contained in the message of Governor Cutler. At the state prison opinion is divided as to the wisdom or justice of the proposed law.—*Summary.*

CLAY AND GLYCERIN.—I have tried Cataplasma Kaolini, a preparation of clay and glycerin, and which is marketed under the names of Antiphlogistine, depletant, etc., in cases of incipient abscess, by applying it warm to the cheek of the patient, holding it in position with a surgical bandage, with gratifying results. Inflammation is usually reduced in this way and the abscess aborted.—*Items of Interest.*

AN IMPORTANT PHYSIOLOGICAL REQUIREMENT IN PULP CAPPING.—In order to encourage the throwing out of secondary dentin as a protective to the pulp, the greatest care must be used to preserve the superficial soft tissue layer of the pulp, from which the secondary dentin is formed, much in the same way as a surgeon preserves the periosteum intact for future bone formation.—F. COLEMAN, *Dental Record.*

DIVORCES.—Mrs. Allie Gibson, wife of George W. Gibson, a prominent dentist of Michigan City, Ind., has brought suit for divorce on the grounds of desertion without cause.—John P. Holsbach, a dentist of St. Louis, Mo., was sued for divorce April 18th by his wife. Frugality in money matters is her charge.—John H. Jackson, a dentist of Spokane, Mass., bringing divorce proceedings against his wife, was ordered by the Court to pay the expense of her coming to Boston to defend the suit.—Mrs. Marietta Caryl has recently brought suit for divorce against W. W. Caryl, a retired dentist of Waukesha, Wis. Among other charges made is that of extreme frugality.—Mrs. Terra Del Whipple, plaintiff in a divorce suit against

John A. Whipple, March 29, filed twelve affidavits supporting her character and behavior while at Paw Paw Lake. Defendant claims she is not entitled to alimony on account of her conduct at this resort.

Extracted Teeth Located in Lungs.—Mrs. Lela Wheeler of Hartford, Conn., swallowed extracted teeth, which came near costing her life. There was no reason to think that the teeth had been breathed into her lungs until about a fortnight ago when she coughed up a couple of pieces of a tooth. A severe illness followed, but after an operation was performed the doctors gave hopes of her recovery.

To Hasten the Solution of Guttapercha in Chloroform.—Chloropercha gets out of service now and then when it is much needed because of loss of chloroform through evaporation. To get it into shape again for immediate use, add the solvent and immerse the container in a dish of hot water. The chloroform begins to boil forthwith and the material is ready for immediate application.—*Brit. Dent. Jour.*

Hydronapthol as a Pulp Capping.—To avoid the removal of the layer of softened dentin, which, if removed, would probably necessitate the removal of the pulp, mix equal quantities of hydronapthol and cement and place as a capping for the layer of dentin, allowing it to set. Then proceed with the filling. The hydronapthol arrests the action of putrefactive germs.—A. W. McCall, *Federal Dental Journal.*

Two Dentists Become Insane.—Overzeal to become a prosperous dentist is said to be the cause of a Boston dentist's mental breakdown. He was removed to the Worcester Insane Asylum after declaring himself Count Louis Phillippe of France.—While serving a term in the United States penitentiary for counterfeiting, a prominent dentist of Denver, Colo., has gone insane and since been removed to the asylum.

Australian Teeth.—At a recent meeting of the New South Wales Dental Association a paper was read on the result of inspections by dentists of the teeth of school children. Three thousand one hundred and fifty-six children and 73,708 teeth were examined. Over 16 per cent of the permanent and 24.47 per cent of the temporary teeth were carious. Ninety-four per cent of the children had decayed teeth. The half-breed Chinese children showed by far the best dentures.—*British Jour. Dent. Science.*

Robberies.—Drs. Gill & Bow, Louisville, Ky., March 22; over $200 worth of gold leaf.—F. E. Roys, Winsted, Conn., April 15; gold, platinum and artificial teeth valued at $200.—Consolidated Dental Co., Cincinnati, O.; $80 worth of gold.—Dr. Good, Hamilton, O., March 29; $30 worth of gold.—Dr. Gaines, Albuquerque, N. M., April 17; partly finished gold bridgework worth $56.—R. A. Munroe, Spokane, Wash., April 13; six pair of forceps.—M. L. Gaither, Springfield, Mo., April 4; five gold crowns, gold plate and gold solder valued at $25.—J. H. Cromwell, Rich Hill, Mo., April 17; $10 in gold besides operating glasses and several other things.—L. O. Addison, Dayton, O., April 8; $20 worth of gold.—A. E. Wipper, Cin-

cinnati, O., March 28; artificial teeth, fillings, etc.—April 11th two men entered a Utica (N. Y.) dental office and after learning the "lay" of the land, returned during the noon hour when one attracted the attention of the person in charge, giving the other the desired opportunity to steal. They escaped with $190 worth of gold.

HIGH PRICED DENTISTRY.—Mark L. Smith, formerly a dentist of Mt. Carmel, Ill., and now of Calcutta, India, was recently summoned by the Ameer of Afghanistan to fill ten of the potentate's teeth, for which he was paid the sum of $10,000, i. e., $1,000 per tooth. The work consumed but little time, though the doctor was gone from his Calcutta office for two months, the rest of the time being spent in traveling to and fro.

JAPAN—TO WHOM LICENSES ARE ISSUED.—Ambassador Luke E. Wright of Tokio transmits translations of recent ordinances relating to licenses for the practice of medicine and dentistry in Japan. The government will grant licenses for their practice to graduates of foreign medical and dental colleges, or those who have practiced such professions in foreign countries who may satisfy the Japanese government requiremnts.—*Dental Summary.*

DENTISTS FOR INSANE ASYLUMS.—Among the bills presented by Assemblyman F. W. Bush in California was one which provides for the appointment of dentists in the state insane asylums, and another which if adopted will pension all state employes who have served twenty-one years. For the dentists to the state hospitals Bush favors a salary of $1,500 or $2,000. All applicants must be graduates of recognized colleges.—*Summary.*

ILLINOIS DENTISTS AND COCAIN.—One of the arguments used against the bill of the Illinois State Board of Pharmacy to restrict the sale of narcotic drugs is that it would practically give dentists a monopoly of the dispensation of cocain and similar drugs, the assertion being made that the restrictions as to druggists and physicians do not apply to dentists. The bill appropriated $7,500 per annum to enable the State Board to enforce the laws governing the sale of drugs.

CLOVE OIL IN HAND DISINFECTION.—Oil of cloves is found to be superior to sublimate solution as a bactericide for sterilizing the hands. After washing with soap and water and drying, the hands are rinsed with alcohol, rubbed for a few minutes with clove oil, and again with spirit. Catgut ligatures immersed for eight days in clove oil, and afterward in alcohol for six or eight hours, are found to be better sterilized than by any other method.—*Brit. Dent. Jour.*

A TIME-SAVING METHOD OF MENDING RUBBER PLATES.—*First.* Assemble the parts, hold in place with wax and pour the plaster as usual. Remove wax and with a large round bur remove enough old rubber to make a space of about one-half inch to be filled with new rubber. Wash with chloroform in order to remove all particles of dust left from the use of the bur. Place new rubber in the space, press it to place with a heated wax spatula, flask and vulcanize, no separating and packing being necessary. After having removed the plate from flask you will find a rough-

ened surface on the inside of the plate where the new rubber has gone through to the plaster. With a large round bur dress down to the surface of the old rubber and the plate is ready to polish.

This method saves a great deal of time and makes a neat as well as strong repair.—W. J. ARMSTRONG, *Western.*

CHLOROFORM WATER AS A HEMOSTATIC.—This is used by Spaak (*Jour. de Medic.,* Sept. 16, 1906), who finds it superior to all other styptics. It acts with marvelous rapidity; it has not the slightest disagreeable taste or odor; it is not escharotic; it is cheap, easily obtainable and can be made as required; it is not unpleasant to apply and does not interfere with the surgeon in his operations. Spaak recommends a two per cent simple solution in water.—*Medical Times.*

AN AFFECTIONATE DENTIST.—A 16-year-old girl of Davenport, Iowa, employed as office assistant to a dentist of that city, has filed suit for $3,000 damages against him, claiming this amount as a balm for injured feelings and shock to her nervous system to the extent that she is unable to work. The dentist insisted on hugging and kissing her and the exertion on her part in resisting these manifestations of affection has caused this condition of her nervous system.

DENTIST BRINGS SUIT AGAINST AGAINST STREET RAILWAY.—A Marion (Ohio) dentist has recently brought suit for $2,500 damages on the grounds that he was unlawfully assaulted and ejected from a car on the night of January 5, 1907. He alleges that he was forced to stand in a pool of water from eight to ten inches deep for twenty minutes waiting for another car and thereby contracted a cold which caused an attack of pleurisy, thus making him unable to do his work.

CONTOURING AMALGAM FILLINGS.—When making large approximal amalgam fillings in bicuspids and molars, remove matrix before thoroughly set, taking care not to displace any part of the filling. Take a strip of rubber dam one inch wide, stretching very thin; slip between the filling and adjacent tooth, sliding the rubber back and forth, keeping it stretched tight and pressing against the filling, you can get a perfect contour and not destroy the contact points. Then split a piece of floss silk and do the same as you did with the rubber and it will take off all the surplus amalgam overlapping the margins.—*Pacific Gazette.*

PORCELAIN FURNACES.—Presumably it is because of lack of knowledge of the electric oven by the majority of the profession that the expert furnace men and dealers have evolved the automatic, pyrometer-governed furnace now placed upon the market. With this kind of a furnace the baking takes care of itself, and produces good results even though the person using it may be a tyro in porcelain art. Yet even this furnace does not satisfy the expert, as there is a variation of time in the first baking and the subsequent ones, unless the oven is allowed to cool off between each baking. It is therefore advised to use more than one furnace if you wish to attain perfection. If you have but one, study its little eccentricities,

the variations of current, the exact time necessary to get the required heat; test it from time to time as the muffle undergoes change in size and thickness by continued use; in short, master all its changes. In this way you may hope to attain some degree of perfection in porcelain work.—L. L. DAVIS, *Dental Review.*

EMBARRASSING EFFECT OF NITROUS OXID GAS.—A New York dentist had to call for the aid of the police to release a young woman patient from his neck. The moment the gas took effect, which had been administered to allow of pulling a tooth, the patient leaped from the chair and clasped the doctor's neck with a bear-like hug. His wife failing in her attempt to break the clasp secured the aid of the police, and when the girl was finally torn away she had to be carried to the hospital.

SERIOUS EFFECT OF NITROUS OXID GAS.—The administration of gas did not produce a laughing effect upon Charles Murphy of Boston, Mass., on April 3d. While under its influence he made a jump for the window and would have fallen four stories had not the dentist grabbed him just as he was going through and brought him to the floor. Murphy came out of the influence extremely quiet and with but a flesh wound received from the glass window. He was removed to the city hospital.

PREPARATION OF ROOT FOR BANDED CROWN.—To allow the shaping to be done without pain or unnecessary hemorrhage, a small piece of gutta-percha retained for a day or so over the root-face will be found of advantage. The guttapercha is best held in position by means of a disc of thin German silver, through the center of which is soldered a short length of wire. Warm the guttapercha, place it around the wire and disc and press tightly, warm, upon the root-face.—PERCIVAL S. CAMPKIN, *British Dental Journal.*

DISINFECTANTS.—A recent bulletin of the Kansas State Board of Health bears on its front page the following motto: "The best natural disinfectant, sunshine; the best germ disinfectant, formaldehyd; the best physical disinfectant, soap; the best moral disinfectant, publicity." The first is dispensed in daytime; the second, in bottles; the third, hard or soft, in cakes or cans respectively; the fourth, in either articulate speech or daily paper, preferably the latter because of its inexpensiveness and far-reaching results.—D. O. & L.

METALS AS BACTERICIDES.—It has long been suspected that the various plain metal elements used as filling materials, etc., were more or less bacteriologically inhibitory, which had by empirical experience determined their suitability for surgical purposes. Investigators have even attempted—but with slight promise of success—to demonstrate a certain property of this nature attributed to pure gold, as partly explaining its widespread employment. Some further light is thrown on the subject by interesting researches by Dr. Charles Leedham-Green, assistant lecturer in bacteriology at Birmingham, on the antiseptic action of metallic sutures, reported in the *Practitioner* for this month. The investigations, though carried on with

care under varying conditions, being confined to the effect upon cultures of staphylococcus, are necessarily of limited scope. But as will be seen by the brief abstract we published, the value of bronze wire, as in every way superior to silver, is substantiated; and small evidence was forthcoming of any appreciable action by gold, platinum, tin, aluminum, magnesium, nickel or their alloys.—*Brit. Dent. Jour.*

Death Caused by the Swallowing of an Artificial Denture.—The *News and Observer* of Raleigh, N. C., the leading daily paper of that city, reports on January 29th the case of a lady patient in the Watts Hospital of Raleigh, who was convalescing from an operation to which she had submitted three weeks previously, and had recovered rapidly to the point where she was considered to be entirely out of danger. She had been seen by her physician, who had just left her, when he was recalled from another ward by the nurse, and hurried to the patient's bedside to find that she was manifesting evidences of strangulation.

Seal All Dressings in Teeth With Cement.—Apply dressing in cavity, cover with ordinary card disc to prevent any pressure by cement coming in contact with dressing. Mix cement rather thin, so it will drop from spatula and adjust itself in cavity. This gives the patient an opportunity to use the tooth while under treatment, prevents their tasting medicine, and, lastly, you get the full benefit of the dressing without it becoming contaminated with the fluids of the mouth.—LeGrand M. Cox, *Dental Review.*

Bankrupts.—Martin Williams, a dentist of Wheaton, Minn., filed a petition in bankruptcy April 2, with liabilities at $7,381.76 and assets at $12,675, of which $5.650 is exempt and $7,000 insurance policies.—Charles W. Bradley, a dentist of Newton, Mass., filed a voluntary petition in bankruptcy on April 4, with liabilities amounting to $3,576 and assets $1,420.—Final report of receiver in the bankruptcy case of G. B. & C. H. Stone was filed April 26, with liabilities at $5,000. Assets were sold several days before the filing of final report.

To Remove Cotton Wound Around a Broach.—Scrape bright the side of the shank corresponding to the smooth side of the broach. This will serve as an indicator when the broach is wound. Lay the broach, barb side down, flat upon a glass slab or other smooth surface. With a knife cut the cotton clear of the broach throughout its entire length. Turn the broach over and draw the knife blade lightly backward over the part covered with cotton. This will disengage the cotton from the barbs.—R. E. Sparks, *Dental Review.*

To Practice Dentistry in Germany.—Vice-Consul J. L. A. Burrell writes from Madgeburg that in the German empire only those dentists receive government approbation who have taken a two years' medical course at a university as well as a technical course of at least six months with a practicing, approved dentist (Zahnarzt), and who have passed the required state dental examination. As, however, the principle of "freedom of trade" (Gewerbefreiheit) permits anyone, viz., those who have not passed the state

examination, practiced dentistry, there are, besides the regular approved "Zahnarzte," a great many so-called "Zahntechnicker," or "laboratory men," who are recruited largely from former assistants of practicing dentists and with whom most of the foreign dentists practicing in Germany are officially classed. The possession of a German title is therefore not necessary, and most of the American dentists practicing in Germany, including some of the most successful, use the term "American dentist" in English, which seems to serve the purpose.—*Dental Summary.*

MARRIAGES.—A. R. Hengst, a dentist of Columbus, O., was married to Miss Mabel Schallenberger of Covington, Ky., April 14.—F. X. Quinn, a dentist of Worcester, Mass., was married to Miss Frances E. Deedy of the same place during April.—G. Haven Stephens, a dentist of Danville, Ill., was married to Miss Elizabeth Stewart of Danville, April 10.—E. E. Armstrong, a dentist of Cherryvale, Kan., was married to Miss Lottie Stahl of Cherryvale, April 1.—I. M. Lightner, a dentist of Carthage, Mo., was married to Miss Blanche Kilgore of Carthage, March 31.

PAINLESS DENTISTRY.—A Baltimore man was one afternoon seated in a dentist's anteroom, waiting his turn, when a young woman, evincing every evidence of utmost agitation at the thought of submitting to an ordeal, entered and took a seat beside him. Very shortly thereafter a series of piercing shrieks came from the operating room, whereupon the timid young woman sprang from her seat in terror and, grasping the arm of the colored attendant gasped:

"Oh, what is that? Oh, what is that?"

"It ain't nothin," miss, the darky hastened to assure her. "It's only a patient that's bein' treated free of charge."—*Harper's Weekly.*

APPLICATION OF SILVER NITRATE.—Silver nitrate should be employed with a great deal of care. We should not use it in very deep cavities where there is danger of irritation of the pulp. It is in the beginning of decay of the teeth that it is especially useful. I crush a crystal of silver nitrate on the glass slide we use for cement and put a drop of water on it; stir it for a moment, then touch the end of a toothpick to it and carry it to the cavity with that, having first dried the cavity. Let this application dry, if possible, in the sun, and within fifteen minutes the silver will be precipitated and it will become black; if not so at the first sitting, repeat it from time to time until you get a thoroughly black surface.—DR. G. V. BLACK, *Review.*

DANGERS OF CHLOROFORM.—Yes, chloroform is the most dangerous of all anesthetics, or, rather, we have more deaths from chloroform than from any other anesthetic. Chloroform is not so much to blame, however, as the administrator. When we understand chloroform better, and avail ourselves of sane methods of administering chloroform, the death rate will not be so high.

Chloroform is often administered from a mask, or large quantities poured on a cone made of a towel and slapped over the face. When we take into

consideration that two per cent of chloroform is all that is needed for anesthetic purposes, and that one per cent is sufficient to maintain anesthesia, and that chloroform is nearly four times as heavy as the atmosphere, you can imagine what may happen when one holds a mask or cone over the face. Might as well take a bucket of water and pour it in a stream into the nose and mouth—for the weight of the chloroform excludes the air—in either case, you would simply drown your patient.—W. H. De Ford, *Dental Brief.*

Suspecting that she might possibly have swallowed her artificial teeth, an examination was made, and the artificial fixture was found to be located in the patient's throat. The plate was removed as quickly as possible, but life was then extinct. The physician said that she had either strangled to death or ruptured a bloodvessel in her effort to remove the plate. The small plate fitted flatly over the windpipe. But a few minutes elapsed between the time when the doctor left her and her death.—*Cosmos.*

Illegal Practitioners.—A man in Ogden, Utah, was up for trial April 8, being charged with practicing dentistry without a license, but was adjudged not guilty and discharged.—April 24 a man in Hamilton, O., was fined $50 and costs for practicing dentistry without a license.—March 27 a man in Brooklyn, N. Y., was fined $50 for practicing dentistry without a license.—A dentist of Washington state was recently convicted of practicing dentistry without a license and fined $77.35 after having sought a writ of mandamus compelling the State Board to examine him. He has, however, disappeared without squaring up this item.

Spence-Metal.—Spence-metal is much used by the European dentists for dies and counter-dies for gold plates. The chief component parts of Spence-metal are iron and sulphur; its fusing point is lower than that of boiling water and it hardens quite rapidly. It must be melted over *a very slow fire,* otherwise it may catch fire with a very suffocating odor of sulphur. Stir with a wooden stick until it presents a very thick, bubbling liquid, then extinguish the fire immediately and leave undisturbed until crystals begin to form at the sides of the vessel—the opportune moment for casting the die. Pour quickly to the edges of the flask because of rapid hardening. It can be poured into a plaster-of-paris impression, first lubricating the impression with oil or vaselin.—Dr. M. Bank, *Western Dental Journal.*

The Reliability of Amalgam.—During the past ten years, and a little over, I have kept up my work with this material, and during that time I can say that I know of many fillings that have been made by myself and others that have kept as clean margins, just as free from any discoloration of the dentin or enamel, as have any gold fillings, and believe this may be made general. I do not claim that this can be done with the same regularity as can be done with gold; nor that it is as easy to do this in any ordinary method of working with amalgam—the manipulation of amalgam to produce regularly first-class results is more difficult than the manipula-

tion of gold, therefore it is in that degree a less reliable material—but that the operations with amalgam which you perform for your patients can be improved, and vastly improved, I feel confident, without any possibility of doubt.—G. V. BLACK, *Dental Practice.*

ARRESTS.—A dentist of Duluth, Minn., has been arrested on the complaint of his wife who charges assault.—A St. Louis dentist is under arrest, charged with having passed a number of counterfeit silver dollars.—A dentist and alleged bigamist, wanted in Cincinnati, Pittsburg, Buffalo, Grand Rapids, Norfolk and Saginaw, charged with having defrauded his wives out of $150,000, is under arrest at Fort Smith, Ark., the specific charge being that of defrauding his Battle Creek wife out of $25,000.—A dentist of Pittsburg, Pa., was found apparently under the influence of a drug in the office of his former employer, soon after midnight, March 26. He was arrested, ordered to pay a forfeit of $25.00 and in default went to the work house for thirty days.

TEETH AID JUDGE IN REACHING DECISION.—April 11th, Municipal Judge Fake of Chicago, put into actual practice a new method of ascertaining a prisoner's age. The case was that of a negro boy who did not know his actual age, but supposed it to be between 14 and 19. As the sentence depended upon the age the court and prosecuting attorney were in a dilemma. The judge, however, had the prisoner brought before him and commanded him to show him his teeth, and after a thorough examination, pronounced him to be 18 years of age. Many local dentists express themselves as doubtful that the age can thus be determined, saying that it is only possible between the ages of 6 to 13. The judge maintains his position, however, and seems in this case to have relied on the wisdom teeth.

EXAMINING BOARD AFFAIRS.—At the last meeting of the Arizona Board of Dental Examiners two out of five applicants were successful in passing the examination. A Phœnix dentist, who has practiced dentistry for eighteen years, was refused examination on the ground of not being a graduate of any college. He went before the district judge in an effort to get a writ of mandamus to compel the board to permit him to take the examination, but this also was refused.—George A. Maxfield received his commission April 13 as a member of the Massachusetts Board of Registry in Dentistry to fill the vacancy caused by the death of Dr. McLeod of New Bedford.—A bill providing for a State Board of Dental Examiners in Minnesota and the regulation of the practice of dentistry recently passed the legislature after the rules had been suspended. The bill is a re-enactment of the present provisions of the code relating to the examination and registration of dentists. One new provision prohibits anyone from doing dental work, either for fees or salary, unless he has the proper license, and another provision makes it unlawful for any licensed dentist or dental firm to employ an unlicensed dentist. The other new provision permits the admission to this state without examination of dentists who have been practicing for five years in a state having laws of equal standard with those of this state and who have a certificate to this effect from the board of their

state.—The State Dental Association of Michigan secured the passage through both houses of bills to increase the membership of the State Board of Dental Examiners from three to five. The house bill simply covers the increase of the membership of the Examining Board. The senate bill, which is primarily intended to eliminate quacks in the dental profession, is for more strict regulation in the registration of practicing dentists and is very stringent, and efforts will therefore be made to substitute the senate bill for the one passed by the house. The bill provides that any licensed dentist, proprietor, partnership, association or corporation owning, running, operating or controlling any room or rooms, office or dental parlors where dental work of any kind is done or provided for, or contracted for, who shall employ, keep or retain any unlicensed dentist or student shall be guilty of a misdemeanor and punished by $50 to $200 fine or twenty to sixty days in the county jail, or both.—Pennsylvania State Representative Strading's new Dental Examiner's Bill has recently been amended on second reading. According to its provisions $10 is the license fee for resident applicants and $15 for non-residents, while the original bill provided for a fee of $25. The compensation to be paid examiners was fixed at not more than $400 out of the fees, and the balance to be paid into the state treasury. The amended bill provides for three meetings a year—one in Philadelphia, one in Pittsburg, and one in Harrisburg instead of two in Harrisburg as was formerly the case.—A bill which was recently up for hearing at the Connecticut capital is one that involves many interesting and important features and practically repeals the present law. It was framed by the legislative committee of the State Dental Association and the Board of Dental Commissioners. The principal feature is the provision relating to the appointment of dental examiners. Under the existing law the governor is empowered to appoint five examiners from among the dentists of the state, irrespective of their affiliations with dental organizations. The proposed bill, however, provides that the governor shall appoint five examiners from the membership of the Connecticut State Dental Society for a term of five years, one member to be appointed each year in order that the entire board shall not be abolished at once as under the present conditions.—Governor Gillett of California made two appointments April 25 to the State Board of Dental Examiners, namely, H. R. Harbison, San Diego, and D. Maurice Crow, Los Angeles. These two men take the places of E. G. Howard, Los Angeles, and G. A. White, Santa Barbara, respectively, who have resigned.—To fiill the vacancy in the Michigan State Board of Examiners recently caused by the expiration of the term of Dr. Charles H. Oakman of Detroit, the governor is being urged to select Dr. H. D. De War of Grand Rapids.—The Rhode Island legislature has a warm fight on its hands in connection with the proposed amendments to the State Dental Law. The Board of Registration in Dentistry, as also the majority of the local practicing dentists, favor the amendments. The opposition comes chiefly from those in control of advertising concerns.